SEQUENCE LISTING

<110> Licentia Ltd.

<120> Novel protein and uses thereof

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<150> US 60/433,011
<151> 2002-12-13

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<170> PatentIn Ver. 2.1

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ttg tcc ctg ctg ctt ttt gag gtg gcc aga gct ggc cga gcc gtg gtt   96
Leu Ser Leu Leu Leu Phe Glu Val Ala Arg Ala Gly Arg Ala Val Val
             20                  25                  30

agc tgt cct gcc gcc tgc ttg tgc gcc agc aac atc ctc agc tgc tcc  144
Ser Cys Pro Ala Ala Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
         35                  40                  45

aag cag cag ctg ccc aat gtg ccc cat tcc ttg ccc agt tac aca gca  192
Lys Gln Gln Leu Pro Asn Val Pro His Ser Leu Pro Ser Tyr Thr Ala
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cta ctg gac ctc agt cac aac aac ctg agc cgc ctg cgg gcc gag tgg  240
Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
 65                  70                  75                  80

acc ccc acg cgc ctg acc caa ctg cac tcc ctg ctg ctg agc cac aac  288
Thr Pro Thr Arg Leu Thr Gln Leu His Ser Leu Leu Leu Ser His Asn
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cac ctg aac ttc atc tcc tct gag gcc ttt tcc ccg gta ccc aac ctg  336
His Leu Asn Phe Ile Ser Ser Glu Ala Phe Ser Pro Val Pro Asn Leu
            100                 105                 110

cgc tac ctg gac ctc tcc tcc aac cag ctg cgt aca ctg gat gag ttc  384
Arg Tyr Leu Asp Leu Ser Ser Asn Gln Leu Arg Thr Leu Asp Glu Phe
        115                 120                 125

ctg ttc agt gac ctg caa gta ctg gag gtg ctg ctg ctc tac aat aac  432
Leu Phe Ser Asp Leu Gln Val Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140
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cac atc atg gcg gtg gac cgg tgc gcc ttc gat gac atg gcc cag ctg   480
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145                 150                 155                 160

cag aaa ctc tac ttg agc cag aac cag atc tct cgc ttc cct ctg gaa   528
Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Leu Glu
                165                 170                 175

ctg gtc aag gaa gga gcc aag cta ccc aaa cta acg ctc ctg gat ctc   576
Leu Val Lys Glu Gly Ala Lys Leu Pro Lys Leu Thr Leu Leu Asp Leu
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tct tct aac aag ctg aag aac ttg cca ttg cct gac ctg cag aag ctg   624
Ser Ser Asn Lys Leu Lys Asn Leu Pro Leu Pro Asp Leu Gln Lys Leu
    195                 200                 205

ccg gcc tgg atc aag aat ggg ctg tac cta cat aac aac ccc ctg aac   672
Pro Ala Trp Ile Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Asn
210                 215                 220

tgc gac tgt gag ctc tac cag ctg ttt tca cac tgg cag tat cgg cag   720
Cys Asp Cys Glu Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

ctg agc tcc gtg atg gac ttt caa gag gat ctg tac tgc atg aac tcc   768
Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met Asn Ser
                245                 250                 255

aag aag ctg cac aat gtc ttc aac ctg agt ttc ctc aac tgt ggc gag   816
Lys Lys Leu His Asn Val Phe Asn Leu Ser Phe Leu Asn Cys Gly Glu
            260                 265                 270

tac aag gag cgt gcc tgg gag gcc cac ctg ggt gac acc ttg atc atc   864
Tyr Lys Glu Arg Ala Trp Glu Ala His Leu Gly Asp Thr Leu Ile Ile
        275                 280                 285

aag tgt gac acc aag cag caa ggg atg acc aag gtg tgg gtg aca cca   912
Lys Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Thr Pro
    290                 295                 300

agt aat gaa cgg gtg cta gat gag gtg acc aat ggc aca gtg agt gtg   960
Ser Asn Glu Arg Val Leu Asp Glu Val Thr Asn Gly Thr Val Ser Val
305                 310                 315                 320

tct aag gat ggc agt ctt ctt ttc cag cag gtg cag gtc gag gac ggt  1008
Ser Lys Asp Gly Ser Leu Leu Phe Gln Gln Val Gln Val Glu Asp Gly
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ggt gtg tat acc tgc tat gcc atg gga gag act ttc aat gag aca ctg  1056
Gly Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu
            340                 345                 350

tct gtg gaa ttg aaa gtg cac aat ttc acc ttg cac gga cac cat gac  1104
Ser Val Glu Leu Lys Val His Asn Phe Thr Leu His Gly His His Asp
        355                 360                 365

acc ctc aac aca gcc tat acc acc cta gtg ggc tgt atc ctt agt gtg  1152
Thr Leu Asn Thr Ala Tyr Thr Thr Leu Val Gly Cys Ile Leu Ser Val
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gtc ctg gtc ctc ata tac cta tac ctc acc cct tgc cgc tgc tgg tgc  1200
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Val Leu Val Leu Ile Tyr Leu Tyr Leu Thr Pro Cys Arg Cys Trp Cys
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Arg Gly Val Glu Lys Pro Ser Ser His Gln Gly Asp Ser Leu Ser Ser
                405                 410                 415

tcc atg ctt agt acc aca ccc aac cat gat cct atg gct ggt ggg gac   1296
Ser Met Leu Ser Thr Thr Pro Asn His Asp Pro Met Ala Gly Gly Asp
            420                 425                 430

aaa gat gat ggt ttt gac cgg cgg gtg gct ttc ctg gaa cct gct gga   1344
Lys Asp Asp Gly Phe Asp Arg Arg Val Ala Phe Leu Glu Pro Ala Gly
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cct ggg cag ggt caa aac ggc aag ctc aag cca ggc aac acc ctg cca   1392
Pro Gly Gln Gly Gln Asn Gly Lys Leu Lys Pro Gly Asn Thr Leu Pro
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gtg cct gag gcc aca ggc aag ggc caa cgg agg atg tcg gat cca gaa   1440
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465                 470                 475                 480

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Ser Cys Pro Ala Ala Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
        35                  40                  45

Lys Gln Gln Leu Pro Asn Val Pro His Ser Leu Pro Ser Tyr Thr Ala
    50                  55                  60

Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
65                  70                  75                  80

Thr Pro Thr Arg Leu Thr Gln Leu His Ser Leu Leu Leu Ser His Asn
                85                  90                  95

His Leu Asn Phe Ile Ser Ser Glu Ala Phe Ser Pro Val Pro Asn Leu
            100                 105                 110

Arg Tyr Leu Asp Leu Ser Ser Asn Gln Leu Arg Thr Leu Asp Glu Phe
        115                 120                 125

Leu Phe Ser Asp Leu Gln Val Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140
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His Ile Met Ala Val Asp Arg Cys Ala Phe Asp Asp Met Ala Gln Leu
145                 150                 155                 160

Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Leu Glu
                165                 170                 175

Leu Val Lys Glu Gly Ala Lys Leu Pro Lys Leu Thr Leu Leu Asp Leu
            180                 185                 190

Ser Ser Asn Lys Leu Lys Asn Leu Pro Leu Pro Asp Leu Gln Lys Leu
        195                 200                 205

Pro Ala Trp Ile Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Asn
    210                 215                 220

Cys Asp Cys Glu Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met Asn Ser
                245                 250                 255

Lys Lys Leu His Asn Val Phe Asn Leu Ser Phe Leu Asn Cys Gly Glu
            260                 265                 270

Tyr Lys Glu Arg Ala Trp Glu Ala His Leu Gly Asp Thr Leu Ile Ile
        275                 280                 285

Lys Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Thr Pro
    290                 295                 300

Ser Asn Glu Arg Val Leu Asp Glu Val Thr Asn Gly Thr Val Ser Val
305                 310                 315                 320

Ser Lys Asp Gly Ser Leu Leu Phe Gln Gln Val Gln Val Glu Asp Gly
                325                 330                 335

Gly Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu
            340                 345                 350

Ser Val Glu Leu Lys Val His Asn Phe Thr Leu His Gly His His Asp
        355                 360                 365

Thr Leu Asn Thr Ala Tyr Thr Thr Leu Val Gly Cys Ile Leu Ser Val
    370                 375                 380

Val Leu Val Leu Ile Tyr Leu Tyr Leu Thr Pro Cys Arg Cys Trp Cys
385                 390                 395                 400

Arg Gly Val Glu Lys Pro Ser Ser His Gln Gly Asp Ser Leu Ser Ser
                405                 410                 415

Ser Met Leu Ser Thr Thr Pro Asn His Asp Pro Met Ala Gly Gly Asp
            420                 425                 430

Lys Asp Asp Gly Phe Asp Arg Arg Val Ala Phe Leu Glu Pro Ala Gly
        435                 440                 445

Pro Gly Gln Gly Gln Asn Gly Lys Leu Lys Pro Gly Asn Thr Leu Pro
    450                 455                 460

Val Pro Glu Ala Thr Gly Lys Gly Gln Arg Arg Met Ser Asp Pro Glu
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aga ccg ggc tgc agg gag ctg ctg tgt ttg ctg atg atc aca gtg act   96
Arg Pro Gly Cys Arg Glu Leu Leu Cys Leu Leu Met Ile Thr Val Thr
            20                  25                  30

gtg ggc cct ggt gcc tct ggg gtg tgc ccc acc gct tgc atc tgt gcc   144
Val Gly Pro Gly Ala Ser Gly Val Cys Pro Thr Ala Cys Ile Cys Ala
        35                  40                  45

act gac atc gtc agc tgc acc aac aaa aac ctg tcc aag gtg cct ggg   192
Thr Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly
    50                  55                  60

aac ctt ttc aga ctg att aag aga ctg gac ctg agt tat aac aga att   240
Asn Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile
65                  70                  75                  80

ggg ctt ctg gat tct gag tgg att cca gta tcg ttt gca aag ctg aac   288
Gly Leu Leu Asp Ser Glu Trp Ile Pro Val Ser Phe Ala Lys Leu Asn
                85                  90                  95

acc cta att ctt cgt cat aac aac atc acc agc att tcc acg ggc agt   336
Thr Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser
            100                 105                 110

ttt tcc aca act cca aat ttg aag tgt ctt gac tta tcg tcc aat aag   384
Phe Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Lys
        115                 120                 125

ctg aag acg gtg aaa aat gct gta ttc caa gag ttg aag gtt ctg gaa   432
Leu Lys Thr Val Lys Asn Ala Val Phe Gln Glu Leu Lys Val Leu Glu
    130                 135                 140

gtg ctt ctg ctt tac aac aat cac ata tcc tat ctc gat cct tca gcg   480
Val Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ser Ala
145                 150                 155                 160

ttt gga ggg ctc tcc cag ttg cag aaa ctc tac tta agt gga aat ttt   528
Phe Gly Gly Leu Ser Gln Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe
                165                 170                 175
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ctc aca cag ttt ccg atg gat ttg tat gtt gga agg ttc aag ctg gca   576
Leu Thr Gln Phe Pro Met Asp Leu Tyr Val Gly Arg Phe Lys Leu Ala
            180                 185                 190

gaa ctg atg ttt tta gat gtt tct tat aac cga att cct tcc atg cca   624
Glu Leu Met Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Met Pro
        195                 200                 205

atg cac cac ata aat tta gtg cca gga aaa cag ctg aga ggc atc tac   672
Met His His Ile Asn Leu Val Pro Gly Lys Gln Leu Arg Gly Ile Tyr
    210                 215                 220

ctt cat gga aac cca ttt gtc tgt gac tgt tcc ctg tac tcc ttg ctg   720
Leu His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu
225                 230                 235                 240

gtc ttt tgg tat cgt agg cac ttt agc tca gtg atg gat ttt aag aac   768
Val Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn
                245                 250                 255

gat tac acc tgt cgc ctg tgg tct gac tcc agg cac tcg cgt cag gta   816
Asp Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser Arg Gln Val
            260                 265                 270

ctt ctg ctc cag gat agc ttt atg aat tgc tct gac agc atc atc aat   864
Leu Leu Leu Gln Asp Ser Phe Met Asn Cys Ser Asp Ser Ile Ile Asn
        275                 280                 285

ggt tcc ttt cgt gcg ctt ggc ttt att cat gag gct cag gtc ggg gaa   912
Gly Ser Phe Arg Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu
    290                 295                 300

aga ctg atg gtc cac tgt gac agc aag aca ggt aat gca aat acg gat   960
Arg Leu Met Val His Cys Asp Ser Lys Thr Gly Asn Ala Asn Thr Asp
305                 310                 315                 320

ttc atc tgg gtg ggt cca gat aac aga ctg cta gag ccg gat aaa gag   1008
Phe Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Glu
                325                 330                 335

atg gaa aac ttt tac gtg ttt cac aat gga agt ctg gtt ata gaa agc   1056
Met Glu Asn Phe Tyr Val Phe His Asn Gly Ser Leu Val Ile Glu Ser
            340                 345                 350

cct cgt ttt gag gat gct gga gtg tat tct tgt atc gca atg aat aag   1104
Pro Arg Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Lys
        355                 360                 365

caa cgc ctg tta aat gaa act gtg gac gtc aca ata aat gtg agc aat   1152
Gln Arg Leu Leu Asn Glu Thr Val Asp Val Thr Ile Asn Val Ser Asn
    370                 375                 380

ttc act gta agc aga tcc cat gct cat gag gca ttt aac aca gct ttt   1200
Phe Thr Val Ser Arg Ser His Ala His Glu Ala Phe Asn Thr Ala Phe
385                 390                 395                 400

acc act ctt gct gct tgc gtg gcc agt atc gtt ttg gta ctt ttg tac   1248
Thr Thr Leu Ala Ala Cys Val Ala Ser Ile Val Leu Val Leu Leu Tyr
                405                 410                 415

ctc tat ctg act cca tgc ccc tgc aag tgt aaa acc aag aga cag aaa   1296
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Leu Tyr Leu Thr Pro Cys Pro Cys Lys Cys Lys Thr Lys Arg Gln Lys
            420                 425                 430

aat atg cta cac caa agc aat gcc cat tca tcg att ctc agt cct ggc   1344
Asn Met Leu His Gln Ser Asn Ala His Ser Ser Ile Leu Ser Pro Gly
        435                 440                 445

ccc gct agt gat gcc tcc gct gat gaa cgg aag gca ggt gca ggt aaa   1392
Pro Ala Ser Asp Ala Ser Ala Asp Glu Arg Lys Ala Gly Ala Gly Lys
    450                 455                 460

aga gtg gtg ttt ttg gaa ccc ctg aag gat act gca gca ggg cag aac   1440
Arg Val Val Phe Leu Glu Pro Leu Lys Asp Thr Ala Ala Gly Gln Asn
465                 470                 475                 480

ggg aaa gtc agg ctc ttt ccc agc gag gca gtg ata gct gag ggc atc   1488
Gly Lys Val Arg Leu Phe Pro Ser Glu Ala Val Ile Ala Glu Gly Ile
                485                 490                 495

cta aag tcc acg agg ggg aaa tct gac tca gat tca gtc aat tca gtg   1536
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ttt tct gac aca cct ttt gtg gcg tcc act                          1566
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Val Gly Pro Gly Ala Ser Gly Val Cys Pro Thr Ala Cys Ile Cys Ala
        35                  40                  45

Thr Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly
    50                  55                  60

Asn Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile
65                  70                  75                  80

Gly Leu Leu Asp Ser Glu Trp Ile Pro Val Ser Phe Ala Lys Leu Asn
                85                  90                  95

Thr Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser
            100                 105                 110

Phe Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Lys
        115                 120                 125

Leu Lys Thr Val Lys Asn Ala Val Phe Gln Glu Leu Lys Val Leu Glu
    130                 135                 140
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Val Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ser Ala
145                 150                 155                 160

Phe Gly Gly Leu Ser Gln Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe
                165                 170                 175

Leu Thr Gln Phe Pro Met Asp Leu Tyr Val Gly Arg Phe Lys Leu Ala
            180                 185                 190

Glu Leu Met Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Met Pro
        195                 200                 205

Met His His Ile Asn Leu Val Pro Gly Lys Gln Leu Arg Gly Ile Tyr
    210                 215                 220

Leu His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu
225                 230                 235                 240

Val Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn
                245                 250                 255

Asp Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser Arg Gln Val
            260                 265                 270

Leu Leu Leu Gln Asp Ser Phe Met Asn Cys Ser Asp Ser Ile Ile Asn
        275                 280                 285

Gly Ser Phe Arg Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu
    290                 295                 300

Arg Leu Met Val His Cys Asp Ser Lys Thr Gly Asn Ala Asn Thr Asp
305                 310                 315                 320

Phe Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Glu
                325                 330                 335

Met Glu Asn Phe Tyr Val Phe His Asn Gly Ser Leu Val Ile Glu Ser
            340                 345                 350

Pro Arg Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Lys
        355                 360                 365

Gln Arg Leu Leu Asn Glu Thr Val Asp Val Thr Ile Asn Val Ser Asn
    370                 375                 380

Phe Thr Val Ser Arg Ser His Ala His Glu Ala Phe Asn Thr Ala Phe
385                 390                 395                 400

Thr Thr Leu Ala Ala Cys Val Ala Ser Ile Val Leu Val Leu Leu Tyr
                405                 410                 415

Leu Tyr Leu Thr Pro Cys Pro Cys Lys Cys Lys Thr Lys Arg Gln Lys
            420                 425                 430

Asn Met Leu His Gln Ser Asn Ala His Ser Ser Ile Leu Ser Pro Gly
        435                 440                 445

Pro Ala Ser Asp Ala Ser Ala Asp Glu Arg Lys Ala Gly Ala Gly Lys
    450                 455                 460

Arg Val Val Phe Leu Glu Pro Leu Lys Asp Thr Ala Ala Gly Gln Asn
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465                 470                 475                 480

Gly Lys Val Arg Leu Phe Pro Ser Glu Ala Val Ile Ala Glu Gly Ile
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Phe Ser Asp Thr Pro Phe Val Ala Ser Thr
        515                 520
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  1               5                  10                  15

ggg tta ggc acc ccg gac tcc gag ggt ttc ccg ccc cgt gcg ctc cac   96
Gly Leu Gly Thr Pro Asp Ser Glu Gly Phe Pro Pro Arg Ala Leu His
             20                  25                  30

aac tgc ccc tac aaa tgt atc tgc gct gcc gac ctg cta agc tgc act   144
Asn Cys Pro Tyr Lys Cys Ile Cys Ala Ala Asp Leu Leu Ser Cys Thr
         35                  40                  45

ggc cta ggg ctg cag gac gtg cca gcc gag tta cct gcc gct act gcg   192
Gly Leu Gly Leu Gln Asp Val Pro Ala Glu Leu Pro Ala Ala Thr Ala
     50                  55                  60

gac ctc gac ctg agc cac aac gcg ctc cag cgc ctg cgc ccc ggc tgg   240
Asp Leu Asp Leu Ser His Asn Ala Leu Gln Arg Leu Arg Pro Gly Trp
 65                  70                  75                  80

ttg gcg ccc ctc ttc cag ctg cgc gcc ctg cac cta gac cac aac gaa   288
Leu Ala Pro Leu Phe Gln Leu Arg Ala Leu His Leu Asp His Asn Glu
                 85                  90                  95

cta gat gcg ctg ggt cgc ggc gtc ttc gtc aac gcc agc ggc ctg agg   336
Leu Asp Ala Leu Gly Arg Gly Val Phe Val Asn Ala Ser Gly Leu Arg
            100                 105                 110

ctg ctc gat cta tca tct aac acg ttg cgg gcg ctt ggc cgc cac gac   384
Leu Leu Asp Leu Ser Ser Asn Thr Leu Arg Ala Leu Gly Arg His Asp
        115                 120                 125

ctc gac ggg ctg ggg gcg ctg gag aag ctg ctt ctg ttc aat aac cgc   432
Leu Asp Gly Leu Gly Ala Leu Glu Lys Leu Leu Leu Phe Asn Asn Arg
    130                 135                 140

ttg gtg cac ttg gac gag cat gcc ttc cac ggc ctg cgc gcg ctc agc   480
Leu Val His Leu Asp Glu His Ala Phe His Gly Leu Arg Ala Leu Ser
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145                 150                 155                 160

cat ctc tac ctg ggc tgc aac gaa ctc gcc tcg ttc tcc ttc gac cac   528
His Leu Tyr Leu Gly Cys Asn Glu Leu Ala Ser Phe Ser Phe Asp His
                165                 170                 175

ctg cac ggt ctg agc gcc acc cac ctg ctt act ctg gac ctc tcc tcc   576
Leu His Gly Leu Ser Ala Thr His Leu Leu Thr Leu Asp Leu Ser Ser
            180                 185                 190

aac cgg ctg gga cac atc tcc gta cct gag ctg gcc gcg ctg ccg gcc   624
Asn Arg Leu Gly His Ile Ser Val Pro Glu Leu Ala Ala Leu Pro Ala
        195                 200                 205

ttc ctc aag aac ggc ctc tac ttg cac aac aac cct ttg cct tgc gac   672
Phe Leu Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

tgc cgc ctc tac cac ctg cta cag cgc tgg cac cag cgg ggc ctg agc   720
Cys Arg Leu Tyr His Leu Leu Gln Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

gcc gtg cgc gac ttt gcg cgc gag tac gta tgc ttg gcc ttc aag gta   768
Ala Val Arg Asp Phe Ala Arg Glu Tyr Val Cys Leu Ala Phe Lys Val
                245                 250                 255

ccc gcg tcc cgc gtg cgc ttc ttc cag cac agc cgc gtc ttt gag aac   816
Pro Ala Ser Arg Val Arg Phe Phe Gln His Ser Arg Val Phe Glu Asn
            260                 265                 270

tgc tcg tcg gcc cca gct ctt ggc cta gag cgg ccg gaa gag cac ctg   864
Cys Ser Ser Ala Pro Ala Leu Gly Leu Glu Arg Pro Glu Glu His Leu
        275                 280                 285

tac gcg ctg gtg ggt cgg tcc ctg agg ctt tac tgc aac acc agc gtc   912
Tyr Ala Leu Val Gly Arg Ser Leu Arg Leu Tyr Cys Asn Thr Ser Val
    290                 295                 300

ccg gcc atg cgc att gcc tgg gtt tcg ccg cag cag gag ctt ctc agg   960
Pro Ala Met Arg Ile Ala Trp Val Ser Pro Gln Gln Glu Leu Leu Arg
305                 310                 315                 320

gcg cca gga tcc cgc gat ggc agc atc gcg gtg ctg gcc gac ggc agc   1008
Ala Pro Gly Ser Arg Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

ttg gcc ata ggc aac gta cag gag cag cat gcg gga ctc ttc gtg tgc   1056
Leu Ala Ile Gly Asn Val Gln Glu Gln His Ala Gly Leu Phe Val Cys
            340                 345                 350

ctg gcc act ggg ccc cgc ctg cac cac aac cag acg cac gag tac aac   1104
Leu Ala Thr Gly Pro Arg Leu His His Asn Gln Thr His Glu Tyr Asn
        355                 360                 365

gtg agc gtg cac ttt ccg cgc cca gag ccc gag gct ttc aac aca ggc   1152
Val Ser Val His Phe Pro Arg Pro Glu Pro Glu Ala Phe Asn Thr Gly
    370                 375                 380

ttc acc aca ctg ctg ggc tgt gcc gtg ggc ctt gtg ctc gtg ctg ctc   1200
Phe Thr Thr Leu Leu Gly Cys Ala Val Gly Leu Val Leu Val Leu Leu
385                 390                 395                 400
```

```
tac ctg ttc gcc cca ccc tgc cgc tgc tgc cgc cgt gcc tgc cgc tgc   1248
Tyr Leu Phe Ala Pro Pro Cys Arg Cys Cys Arg Arg Ala Cys Arg Cys
                405                 410                 415

cgc cgc tgg ccc caa aca ccc agc ccg ctc caa gag ctg agc gca cag   1296
Arg Arg Trp Pro Gln Thr Pro Ser Pro Leu Gln Glu Leu Ser Ala Gln
            420                 425                 430

tcc tca gta ctc agc acc aca ccg cca gac gca ccc agc cgc aag gcc   1344
Ser Ser Val Leu Ser Thr Thr Pro Pro Asp Ala Pro Ser Arg Lys Ala
        435                 440                 445

agc gtc cac aag cac gta gtc ttt ctg gag cca ggc cgg agg ggc ctc   1392
Ser Val His Lys His Val Val Phe Leu Glu Pro Gly Arg Arg Gly Leu
    450                 455                 460

aat ggc cgc gtg cag ctg gca gta gct gag gaa ttc gat ctc tac aac   1440
Asn Gly Arg Val Gln Leu Ala Val Ala Glu Glu Phe Asp Leu Tyr Asn
465                 470                 475                 480

cct gga ggc ctg cag ctg aag gct ggc tct gag tcc gcc agc tcc ata   1488
Pro Gly Gly Leu Gln Leu Lys Ala Gly Ser Glu Ser Ala Ser Ser Ile
                485                 490                 495

ggc tcc gag ggt ccc atg aca acc                                   1512
Gly Ser Glu Gly Pro Met Thr Thr
            500
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<210> 6
<211> 504
<212> PRT
<213> Homo sapiens

<400> 6

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Met Thr Trp Leu Val Leu Leu Gly Thr Leu Leu Cys Met Leu Arg Val
  1               5                  10                  15

Gly Leu Gly Thr Pro Asp Ser Glu Gly Phe Pro Pro Arg Ala Leu His
             20                  25                  30

Asn Cys Pro Tyr Lys Cys Ile Cys Ala Ala Asp Leu Leu Ser Cys Thr
         35                  40                  45

Gly Leu Gly Leu Gln Asp Val Pro Ala Glu Leu Pro Ala Ala Thr Ala
     50                  55                  60

Asp Leu Asp Leu Ser His Asn Ala Leu Gln Arg Leu Arg Pro Gly Trp
 65                  70                  75                  80

Leu Ala Pro Leu Phe Gln Leu Arg Ala Leu His Leu Asp His Asn Glu
                 85                  90                  95

Leu Asp Ala Leu Gly Arg Gly Val Phe Val Asn Ala Ser Gly Leu Arg
            100                 105                 110

Leu Leu Asp Leu Ser Ser Asn Thr Leu Arg Ala Leu Gly Arg His Asp
        115                 120                 125

Leu Asp Gly Leu Gly Ala Leu Glu Lys Leu Leu Leu Phe Asn Asn Arg
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```
    130                 135                 140

Leu Val His Leu Asp Glu His Ala Phe His Gly Leu Arg Ala Leu Ser
145                 150                 155                 160

His Leu Tyr Leu Gly Cys Asn Glu Leu Ala Ser Phe Ser Phe Asp His
                165                 170                 175

Leu His Gly Leu Ser Ala Thr His Leu Leu Thr Leu Asp Leu Ser Ser
            180                 185                 190

Asn Arg Leu Gly His Ile Ser Val Pro Glu Leu Ala Ala Leu Pro Ala
        195                 200                 205

Phe Leu Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

Cys Arg Leu Tyr His Leu Leu Gln Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

Ala Val Arg Asp Phe Ala Arg Glu Tyr Val Cys Leu Ala Phe Lys Val
                245                 250                 255

Pro Ala Ser Arg Val Arg Phe Phe Gln His Ser Arg Val Phe Glu Asn
            260                 265                 270

Cys Ser Ser Ala Pro Ala Leu Gly Leu Glu Arg Pro Glu Glu His Leu
        275                 280                 285

Tyr Ala Leu Val Gly Arg Ser Leu Arg Leu Tyr Cys Asn Thr Ser Val
    290                 295                 300

Pro Ala Met Arg Ile Ala Trp Val Ser Pro Gln Gln Glu Leu Leu Arg
305                 310                 315                 320

Ala Pro Gly Ser Arg Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

Leu Ala Ile Gly Asn Val Gln Glu Gln His Ala Gly Leu Phe Val Cys
            340                 345                 350

Leu Ala Thr Gly Pro Arg Leu His His Asn Gln Thr His Glu Tyr Asn
        355                 360                 365

Val Ser Val His Phe Pro Arg Pro Glu Pro Glu Ala Phe Asn Thr Gly
    370                 375                 380

Phe Thr Thr Leu Leu Gly Cys Ala Val Gly Leu Val Leu Val Leu Leu
385                 390                 395                 400

Tyr Leu Phe Ala Pro Pro Cys Arg Cys Cys Arg Arg Ala Cys Arg Cys
                405                 410                 415

Arg Arg Trp Pro Gln Thr Pro Ser Pro Leu Gln Glu Leu Ser Ala Gln
            420                 425                 430

Ser Ser Val Leu Ser Thr Thr Pro Pro Asp Ala Pro Ser Arg Lys Ala
        435                 440                 445

Ser Val His Lys His Val Val Phe Leu Glu Pro Gly Arg Arg Gly Leu
    450                 455                 460
```

```
Asn Gly Arg Val Gln Leu Ala Val Ala Glu Glu Phe Asp Leu Tyr Asn
465                 470                 475                 480

Pro Gly Gly Leu Gln Leu Lys Ala Gly Ser Glu Ser Ala Ser Ser Ile
                485                 490                 495

Gly Ser Glu Gly Pro Met Thr Thr
            500
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<210> 7
<211> 1827
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Ig-fusion protein

<220>
<221> CDS
<222> (1)..(1827)

<400> 7

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atg caa ccc cag cgt gac ctg cga ggc ctc tgg ctc ctg ctg ctc tcc   48
Met Gln Pro Gln Arg Asp Leu Arg Gly Leu Trp Leu Leu Leu Leu Ser
  1               5                  10                  15

gtg ttc ctg ctt ctc ttt gag gta gcc agg gcc ggc cga tct gtg gtt   96
Val Phe Leu Leu Leu Phe Glu Val Ala Arg Ala Gly Arg Ser Val Val
            20                  25                  30

agt tgt ccc gcc aac tgc ctg tgc gcc agc aac atc ctc agc tgc tcc   144
Ser Cys Pro Ala Asn Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
        35                  40                  45

aag cag cag ctg ccc aat gtg ccc caa tct ttg ccc agc tac aca gca   192
Lys Gln Gln Leu Pro Asn Val Pro Gln Ser Leu Pro Ser Tyr Thr Ala
    50                  55                  60

ctg ctg gac ctc agc cac aac aac ttg agc agg ctg cgg gcc gag tgg   240
Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
65                  70                  75                  80

acc ccc acc cgg ctg acc aac ctg cac tcc ctg ctg ctg agc cac aac   288
Thr Pro Thr Arg Leu Thr Asn Leu His Ser Leu Leu Leu Ser His Asn
                85                  90                  95

cac ctg aac ttc atc tcc tcc gag gcc ttc gtc ccc gta ccc aac ctt   336
His Leu Asn Phe Ile Ser Ser Glu Ala Phe Val Pro Val Pro Asn Leu
            100                 105                 110

agg tac ttg gac ctc tcc tcc aac cat ctt cac acg ctg gat gag ttc   384
Arg Tyr Leu Asp Leu Ser Ser Asn His Leu His Thr Leu Asp Glu Phe
        115                 120                 125

ctg ttc agc gac ctg cag gcg ctg gaa gtg ctg ttg ctc tac aat aac   432
Leu Phe Ser Asp Leu Gln Ala Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140
```

```
cac att gtg gtg gtg gac cgg aat gcc ttt gag gac atg gcc cag ctg   480
His Ile Val Val Val Asp Arg Asn Ala Phe Glu Asp Met Ala Gln Leu
145                 150                 155                 160

cag aaa ctc tac tta agc cag aat cag atc tct cgc ttt cct gtg gaa   528
Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Val Glu
                165                 170                 175

ctg atc aag gat ggg aac aaa tta ccc aaa ctg atg ctc ttg gat ctg   576
Leu Ile Lys Asp Gly Asn Lys Leu Pro Lys Leu Met Leu Leu Asp Leu
            180                 185                 190

tcc tcc aac aag ctg aag aag ttg ccc ctg act gac ctg cag aaa ttg   624
Ser Ser Asn Lys Leu Lys Lys Leu Pro Leu Thr Asp Leu Gln Lys Leu
        195                 200                 205

cca gcc tgg gtc aag aat ggg cta tac ctg cat aac aac ccc ttg gag   672
Pro Ala Trp Val Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Glu
    210                 215                 220

tgc gac tgc aag ctc tac cag ctc ttt tcg cac tgg cag tac cgg cag   720
Cys Asp Cys Lys Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

ctg agc tct gtg atg gac ttc cag gag gac ctg tac tgc atg cac tcc   768
Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met His Ser
                245                 250                 255

aag aag ctg cac aac atc ttc agc ctg gat ttc ttc aat tgc agc gag   816
Lys Lys Leu His Asn Ile Phe Ser Leu Asp Phe Phe Asn Cys Ser Glu
            260                 265                 270

tac aag gaa agt gcc tgg gag gct cac ctg gga gac acc ttg acc atc   864
Tyr Lys Glu Ser Ala Trp Glu Ala His Leu Gly Asp Thr Leu Thr Ile
        275                 280                 285

agg tgt gac acc aaa cag caa ggc atg acc aaa gtg tgg gtg tcc cca   912
Arg Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Ser Pro
    290                 295                 300

agc aat gaa cag gtg cta agt cag ggg tcc aat ggc tcg gtg agc gtg   960
Ser Asn Glu Gln Val Leu Ser Gln Gly Ser Asn Gly Ser Val Ser Val
305                 310                 315                 320

agg aat ggc gac ctt ttt ttt aaa aag gtg cag gtc gag gat ggg ggt  1008
Arg Asn Gly Asp Leu Phe Phe Lys Lys Val Gln Val Glu Asp Gly Gly
                325                 330                 335

gtg tat acc tgt tac gcc atg ggg gag act ttc aac gag aca ctg tct  1056
Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu Ser
            340                 345                 350

gtg gag ttg aaa gtg tat aac ttc acc ttg cac gga cac cat gac acc  1104
Val Glu Leu Lys Val Tyr Asn Phe Thr Leu His Gly His His Asp Thr
        355                 360                 365

ctc aac gga tcc gag gtg ctg ttc cag ggc ccc aaa tct tgt gac aaa  1152
Leu Asn Gly Ser Glu Val Leu Phe Gln Gly Pro Lys Ser Cys Asp Lys
    370                 375                 380
```

```
act cac aca tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg   1200
Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
385                 390                 395                 400

tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc   1248
Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
                405                 410                 415

cgg acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac   1296
Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
            420                 425                 430

cct gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat   1344
Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        435                 440                 445

gcc aag aca aag ccg cgg gag gag cag tac aac agc acg tac cgg gtg   1392
Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
    450                 455                 460

gtc agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag   1440
Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
465                 470                 475                 480

tac aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa   1488
Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
                485                 490                 495

acc atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc   1536
Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            500                 505                 510

ctg ccc cca tcc cgg gat gag ctg acc aag aac cag gtc agc ctg acc   1584
Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr
        515                 520                 525

tgc ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag   1632
Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    530                 535                 540

agc aat ggg cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg   1680
Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
545                 550                 555                 560

gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag   1728
Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
                565                 570                 575

agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag   1776
Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            580                 585                 590

gct ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt   1824
Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
        595                 600                 605

aaa                                                               1827
Lys
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<210> 8

<211> 609
<212> PRT
<213> Artificial Sequence
<223> Description of Artificial Sequence: Ig-fusion protein

<400> 8

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Met Gln Pro Gln Arg Asp Leu Arg Gly Leu Trp Leu Leu Leu Leu Ser
  1               5                  10                  15

Val Phe Leu Leu Leu Phe Glu Val Ala Arg Ala Gly Arg Ser Val Val
             20                  25                  30

Ser Cys Pro Ala Asn Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
         35                  40                  45

Lys Gln Gln Leu Pro Asn Val Pro Gln Ser Leu Pro Ser Tyr Thr Ala
     50                  55                  60

Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
 65                  70                  75                  80

Thr Pro Thr Arg Leu Thr Asn Leu His Ser Leu Leu Leu Ser His Asn
                85                  90                  95

His Leu Asn Phe Ile Ser Ser Glu Ala Phe Val Pro Val Pro Asn Leu
            100                 105                 110

Arg Tyr Leu Asp Leu Ser Ser Asn His Leu His Thr Leu Asp Glu Phe
        115                 120                 125

Leu Phe Ser Asp Leu Gln Ala Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140

His Ile Val Val Val Asp Arg Asn Ala Phe Glu Asp Met Ala Gln Leu
145                 150                 155                 160

Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Val Glu
                165                 170                 175

Leu Ile Lys Asp Gly Asn Lys Leu Pro Lys Leu Met Leu Leu Asp Leu
            180                 185                 190

Ser Ser Asn Lys Leu Lys Lys Leu Pro Leu Thr Asp Leu Gln Lys Leu
        195                 200                 205

Pro Ala Trp Val Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Glu
    210                 215                 220

Cys Asp Cys Lys Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met His Ser
                245                 250                 255

Lys Lys Leu His Asn Ile Phe Ser Leu Asp Phe Phe Asn Cys Ser Glu
            260                 265                 270

Tyr Lys Glu Ser Ala Trp Glu Ala His Leu Gly Asp Thr Leu Thr Ile
        275                 280                 285
```

```
Arg Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Ser Pro
    290                 295                 300

Ser Asn Glu Gln Val Leu Ser Gln Gly Ser Asn Gly Ser Val Ser Val
305                 310                 315                 320

Arg Asn Gly Asp Leu Phe Phe Lys Lys Val Gln Val Glu Asp Gly Gly
                325                 330                 335

Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu Ser
            340                 345                 350

Val Glu Leu Lys Val Tyr Asn Phe Thr Leu His Gly His His Asp Thr
        355                 360                 365

Leu Asn Gly Ser Glu Val Leu Phe Gln Gly Pro Lys Ser Cys Asp Lys
    370                 375                 380

Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro
385                 390                 395                 400

Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser
                405                 410                 415

Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp
            420                 425                 430

Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn
        435                 440                 445

Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val
    450                 455                 460

Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu
465                 470                 475                 480

Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys
                485                 490                 495

Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr
            500                 505                 510

Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr
        515                 520                 525

Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu
    530                 535                 540

Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu
545                 550                 555                 560

Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys
                565                 570                 575

Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu
            580                 585                 590

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly
        595                 600                 605

Lys
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<210> 9
<211> 1920
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Ig-fusion protein

<220>
<221> CDS
<222> (1)..(1920)

<400> 9

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atg tcg tta agg ttc cac aca ctg ccc acc ctg cct aga gct gtc aaa   48
Met Ser Leu Arg Phe His Thr Leu Pro Thr Leu Pro Arg Ala Val Lys
 1               5                  10                  15

ccg ggt tgc aga gag ctg ctg tgt ctg ttg gtg atc gca gtg atg gtg   96
Pro Gly Cys Arg Glu Leu Leu Cys Leu Leu Val Ile Ala Val Met Val
            20                  25                  30

agc ccc agc gcc tca gga atg tgc ccc act gct tgc atc tgt gcc acc   144
Ser Pro Ser Ala Ser Gly Met Cys Pro Thr Ala Cys Ile Cys Ala Thr
        35                  40                  45

gac att gtc agc tgc acc aac aaa aac cta tct aag gtg ccc ggg aac   192
Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly Asn
    50                  55                  60

ctt ttc aga ctg att aaa aga ctg gat ctg agc tat aac aga atc gga   240
Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile Gly
65                  70                  75                  80

ctg ttg gat gcc gac tgg atc ccg gtg tcg ttt gtc aag ctg agc acc   288
Leu Leu Asp Ala Asp Trp Ile Pro Val Ser Phe Val Lys Leu Ser Thr
                85                  90                  95

tta att ctt cgc cac aac aac atc acc agc atc tcc acg ggc agt ttc   336
Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser Phe
            100                 105                 110

tcc aca acc cca aat tta aag tgt ctg gac tta tca tcc aat agg ctg   384
Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Arg Leu
        115                 120                 125

aag tcg gta aag agt gcc aca ttc caa gag ctg aag gct ctg gaa gta   432
Lys Ser Val Lys Ser Ala Thr Phe Gln Glu Leu Lys Ala Leu Glu Val
    130                 135                 140

ctg ctg ctg tac aac aac cac att tcc tat ctg gac ccc gca gcg ttc   480
Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ala Ala Phe
145                 150                 155                 160

ggg ggg ctt tcc cac ttg cag aaa ctc tat ctg agt ggg aac ttt ctc   528
Gly Gly Leu Ser His Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe Leu
                165                 170                 175
```

```
aca cag ttc cct atg gat ttg tat act ggg agg ttc aag ctg gct gat   576
Thr Gln Phe Pro Met Asp Leu Tyr Thr Gly Arg Phe Lys Leu Ala Asp
            180                 185                 190

ctg aca ttt tta gat gtt tcc tat aat cga atc cct tcc ata ccg atg   624
Leu Thr Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Ile Pro Met
        195                 200                 205

cac cat ata aac tta gtg ccg ggg aga cag ctg aga ggc atc tac ctt   672
His His Ile Asn Leu Val Pro Gly Arg Gln Leu Arg Gly Ile Tyr Leu
    210                 215                 220

cac ggg aac cca ttt gta tgt gac tgt tct ctg tac tcg ttg ctg atc   720
His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu Ile
225                 230                 235                 240

ttt tgg tac cgt agg cac ttt agc tcc gtg atg gat ttt aag aat gac   768
Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn Asp
                245                 250                 255

tat acc tgt cgc ctg tgg tct gac tcc agg cac tcc cac cag ctg cag   816
Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser His Gln Leu Gln
            260                 265                 270

ctg ctc cag gag agc ttt ctg aac tgt tct tac agc gtt atc aac ggc   864
Leu Leu Gln Glu Ser Phe Leu Asn Cys Ser Tyr Ser Val Ile Asn Gly
        275                 280                 285

tcc ttc cac gca ctt ggc ttt atc cac gag gct cag gtt ggg gag agg   912
Ser Phe His Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu Arg
    290                 295                 300

gcg atc gtc cac tgt gac agc aag act ggc aat gga aat act gat ttc   960
Ala Ile Val His Cys Asp Ser Lys Thr Gly Asn Gly Asn Thr Asp Phe
305                 310                 315                 320

atc tgg gtc ggt ccc gat aac agg ctg ctg gag cca gat aaa gac atg   1008
Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Asp Met
                325                 330                 335

ggg aac ttt cgt gtg ttt tac aac gga agt ctg gtc ata gag aac cct   1056
Gly Asn Phe Arg Val Phe Tyr Asn Gly Ser Leu Val Ile Glu Asn Pro
            340                 345                 350

ggc ttt gag gac gcc ggg gta tat tct tgt atc gca atg aac agg cag   1104
Gly Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Arg Gln
        355                 360                 365

cgg ctg tta aac gag acg gtg gat atc atg atc aac gtg agc aat ttc   1152
Arg Leu Leu Asn Glu Thr Val Asp Ile Met Ile Asn Val Ser Asn Phe
    370                 375                 380

acc ata aac aga tcc cac gcc cac gag gcg gcg gcc gcg gat ccc atc   1200
Thr Ile Asn Arg Ser His Ala His Glu Ala Ala Ala Ala Asp Pro Ile
385                 390                 395                 400

gaa ggt cgt ggt ggt ggt ggt ggt gat ccc aaa tct tgt gac aaa cct   1248
Glu Gly Arg Gly Gly Gly Gly Gly Asp Pro Lys Ser Cys Asp Lys Pro
                405                 410                 415
```

```
cac aca tgc cca ccg tgc cca gca cct gaa ctc ctg ggg gga ccg tca   1296
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
            420                 425                 430

gtc ttc ctc ttc ccc cca aaa ccc aag gac acc ctc atg atc tcc cgg   1344
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
        435                 440                 445

acc cct gag gtc aca tgc gtg gtg gtg gac gtg agc cac gaa gac cct   1392
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
    450                 455                 460

gag gtc aag ttc aac tgg tac gtg gac ggc gtg gag gtg cat aat gcc   1440
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
465                 470                 475                 480

aag aca aag ccg cgg gag gag cag tac aac agc acg tac cgg gtg gtc   1488
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
                485                 490                 495

agc gtc ctc acc gtc ctg cac cag gac tgg ctg aat ggc aag gag tac   1536
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
            500                 505                 510

aag tgc aag gtc tcc aac aaa gcc ctc cca gcc ccc atc gag aaa acc   1584
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
        515                 520                 525

atc tcc aaa gcc aaa ggg cag ccc cga gaa cca cag gtg tac acc ctg   1632
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
    530                 535                 540

ccc cca tcc cgg gat gag ctg acc aag aac cag gtc agc ctg acc tgc   1680
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
545                 550                 555                 560

ctg gtc aaa ggc ttc tat ccc agc gac atc gcc gtg gag tgg gag agc   1728
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
                565                 570                 575

aat ggg cag ccg gag aac aac tac aag acc acg cct ccc gtg ctg gac   1776
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
            580                 585                 590

tcc gac ggc tcc ttc ttc ctc tac agc aag ctc acc gtg gac aag agc   1824
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
        595                 600                 605

agg tgg cag cag ggg aac gtc ttc tca tgc tcc gtg atg cat gag gct   1872
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
    610                 615                 620

ctg cac aac cac tac acg cag aag agc ctc tcc ctg tct ccg ggt aaa   1920
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
625                 630                 635                 640
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<210> 10
<211> 640
<212> PRT
<213> Artificial Sequence

<223> Description of Artificial Sequence: Ig-fusion protein

<400> 10

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Met Ser Leu Arg Phe His Thr Leu Pro Thr Leu Pro Arg Ala Val Lys
 1               5                  10                  15

Pro Gly Cys Arg Glu Leu Leu Cys Leu Leu Val Ile Ala Val Met Val
            20                  25                  30

Ser Pro Ser Ala Ser Gly Met Cys Pro Thr Ala Cys Ile Cys Ala Thr
        35                  40                  45

Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly Asn
    50                  55                  60

Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile Gly
65                  70                  75                  80

Leu Leu Asp Ala Asp Trp Ile Pro Val Ser Phe Val Lys Leu Ser Thr
                85                  90                  95

Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser Phe
            100                 105                 110

Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Arg Leu
        115                 120                 125

Lys Ser Val Lys Ser Ala Thr Phe Gln Glu Leu Lys Ala Leu Glu Val
    130                 135                 140

Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ala Ala Phe
145                 150                 155                 160

Gly Gly Leu Ser His Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe Leu
                165                 170                 175

Thr Gln Phe Pro Met Asp Leu Tyr Thr Gly Arg Phe Lys Leu Ala Asp
            180                 185                 190

Leu Thr Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Ile Pro Met
        195                 200                 205

His His Ile Asn Leu Val Pro Gly Arg Gln Leu Arg Gly Ile Tyr Leu
    210                 215                 220

His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu Ile
225                 230                 235                 240

Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn Asp
                245                 250                 255

Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser His Gln Leu Gln
            260                 265                 270

Leu Leu Gln Glu Ser Phe Leu Asn Cys Ser Tyr Ser Val Ile Asn Gly
        275                 280                 285

Ser Phe His Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu Arg
    290                 295                 300
```

```
Ala Ile Val His Cys Asp Ser Lys Thr Gly Asn Gly Asn Thr Asp Phe
305                 310                 315                 320

Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Asp Met
                325                 330                 335

Gly Asn Phe Arg Val Phe Tyr Asn Gly Ser Leu Val Ile Glu Asn Pro
            340                 345                 350

Gly Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Arg Gln
        355                 360                 365

Arg Leu Leu Asn Glu Thr Val Asp Ile Met Ile Asn Val Ser Asn Phe
    370                 375                 380

Thr Ile Asn Arg Ser His Ala His Glu Ala Ala Ala Ala Asp Pro Ile
385                 390                 395                 400

Glu Gly Arg Gly Gly Gly Gly Gly Asp Pro Lys Ser Cys Asp Lys Pro
                405                 410                 415

His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser
            420                 425                 430

Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg
        435                 440                 445

Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro
    450                 455                 460

Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala
465                 470                 475                 480

Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val
                485                 490                 495

Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr
            500                 505                 510

Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr
        515                 520                 525

Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu
    530                 535                 540

Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys
545                 550                 555                 560

Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser
                565                 570                 575

Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp
            580                 585                 590

Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser
        595                 600                 605

Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala
    610                 615                 620
```

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Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys
625                 630                 635                 640
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<210> 11
<211> 1887
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Ig-fusion protein

<220>
<221> CDS
<222> (1)..(1887)

<400> 11

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atg gcc tgg cta gtg cta tca ggt ata cta cta tgc atg ttg ggt gct   48
Met Ala Trp Leu Val Leu Ser Gly Ile Leu Leu Cys Met Leu Gly Ala
  1               5                  10                  15

gga ttg ggc act tca gac ttg gag gat gtt ctg cct cct gct ccc cac   96
Gly Leu Gly Thr Ser Asp Leu Glu Asp Val Leu Pro Pro Ala Pro His
             20                  25                  30

aac tgc ccc gat ata tgc atc tgt gct gcc gat gtg ttg agc tgt gcg  144
Asn Cys Pro Asp Ile Cys Ile Cys Ala Ala Asp Val Leu Ser Cys Ala
         35                  40                  45

ggc cgt ggg tta cag gac ttg ccg gta gca ctg cct acc act gct gca  192
Gly Arg Gly Leu Gln Asp Leu Pro Val Ala Leu Pro Thr Thr Ala Ala
     50                  55                  60

gaa ctc gat ttg agc cac aac gca ctc aaa cgc ctg cac ccg ggg tgg  240
Glu Leu Asp Leu Ser His Asn Ala Leu Lys Arg Leu His Pro Gly Trp
 65                  70                  75                  80

tta gcg ccc ctc tcc cgg ctg cgt gcc ttg cac cta ggc tat aat aag  288
Leu Ala Pro Leu Ser Arg Leu Arg Ala Leu His Leu Gly Tyr Asn Lys
                85                  90                  95

ctg gaa gtc ctg ggc cat ggt gcg ttc acc aat gcc agt ggc ctg agg  336
Leu Glu Val Leu Gly His Gly Ala Phe Thr Asn Ala Ser Gly Leu Arg
            100                 105                 110

aca ctt gac ctg tcc tct aat atg tta agg atg ctc cat acc cat gac  384
Thr Leu Asp Leu Ser Ser Asn Met Leu Arg Met Leu His Thr His Asp
        115                 120                 125

ctg gat ggc ctg gag gag ctg gag aag tta ctt ctg ttc aat aac agc  432
Leu Asp Gly Leu Glu Glu Leu Glu Lys Leu Leu Leu Phe Asn Asn Ser
    130                 135                 140

ctg atg cac ttg gac ctg gat gcc ttc cag ggc ctg cgc atg ctt agc  480
Leu Met His Leu Asp Leu Asp Ala Phe Gln Gly Leu Arg Met Leu Ser
145                 150                 155                 160

cac ctc tat ctc agc tgc aac gag ctc tcc tct ttc tct ttc aac cac  528
His Leu Tyr Leu Ser Cys Asn Glu Leu Ser Ser Phe Ser Phe Asn His
```

```
                165                 170                 175

ttg cac ggt ctg ggg tta acc cgc ctg cgg act ctg gac ctc tcc tcc   576
Leu His Gly Leu Gly Leu Thr Arg Leu Arg Thr Leu Asp Leu Ser Ser
            180                 185                 190

aac tgg ctg aaa cat atc tcc atc cct gag ttg gct gca ctg cca act   624

Asn Trp Leu Lys His Ile Ser Ile Pro Glu Leu Ala Ala Leu Pro Thr
        195                 200                 205

tat ctc aag aac agg ctc tac ctg cac aac aac ccg ctg ccc tgt gac   672
Tyr Leu Lys Asn Arg Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

tgc agc ctc tac cac ctg ctc cgg cgc tgg cac cag cgg ggc ctg agt   720
Cys Ser Leu Tyr His Leu Leu Arg Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

gcc ctg cat gat ttt gaa cgc gag tac aca tgc ttg gtc ttt aag gtg   768
Ala Leu His Asp Phe Glu Arg Glu Tyr Thr Cys Leu Val Phe Lys Val
                245                 250                 255

tca gag tcc cga gtg cgc ttt ttt gag cac agc cgg gtc ttc aag aac   816
Ser Glu Ser Arg Val Arg Phe Phe Glu His Ser Arg Val Phe Lys Asn
            260                 265                 270

tgc tct gtg gct gca gct cca ggc tta gag ctg cct gaa gag cag ctg   864
Cys Ser Val Ala Ala Ala Pro Gly Leu Glu Leu Pro Glu Glu Gln Leu
        275                 280                 285

cac gcg cag gtg ggc cag tcc ctg agg ctc ttc tgc aac acc agt gtg   912
His Ala Gln Val Gly Gln Ser Leu Arg Leu Phe Cys Asn Thr Ser Val
    290                 295                 300

cct gcc act cgg gtg gcc tgg gtc tcc ccg aag aat gag ctg ctt gtg   960
Pro Ala Thr Arg Val Ala Trp Val Ser Pro Lys Asn Glu Leu Leu Val
305                 310                 315                 320

gcg cca gcc tct cag gat ggt agc atc gct gtg ttg gct gat ggc agc  1008
Ala Pro Ala Ser Gln Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

tta gcc ata ggc agg gtg caa gag cag cac gca ggc gtc ttt gtg tgc  1056
Leu Ala Ile Gly Arg Val Gln Glu Gln His Ala Gly Val Phe Val Cys
            340                 345                 350

ctg gcc agt ggg ccc cgc ctg cac cac aac cag aca ctt gag tac aat  1104
Leu Ala Ser Gly Pro Arg Leu His His Asn Gln Thr Leu Glu Tyr Asn
        355                 360                 365

gtg agt gtg caa aag gct cgc ccc gag cca gag act ttc aac aca gcg  1152
Val Ser Val Gln Lys Ala Arg Pro Glu Pro Glu Thr Phe Asn Thr Ala
    370                 375                 380

gcc gcg gat ccc atc gaa ggt cgt ggt ggt ggt ggt ggt gat ccc aaa  1200
Ala Ala Asp Pro Ile Glu Gly Arg Gly Gly Gly Gly Gly Asp Pro Lys
385                 390                 395                 400

tct tgt gac aaa cct cac aca tgc cca ccg tgc cca gca cct gaa ctc  1248
Ser Cys Asp Lys Pro His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
```

```
                405                 410                 415

ctg ggg gga ccg tca gtc ttc ctc ttc ccc cca aaa ccc aag gac acc   1296
Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
            420                 425                 430

ctc atg atc tcc cgg acc cct gag gtc aca tgc gtg gtg gtg gac gtg   1344
Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
        435                 440                 445

agc cac gaa gac cct gag gtc aag ttc aac tgg tac gtg gac ggc gtg   1392
Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
    450                 455                 460

gag gtg cat aat gcc aag aca aag ccg cgg gag gag cag tac aac agc   1440
Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
465                 470                 475                 480

acg tac cgg gtg gtc agc gtc ctc acc gtc ctg cac cag gac tgg ctg   1488
Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
                485                 490                 495


aat ggc aag gag tac aag tgc aag gtc tcc aac aaa gcc ctc cca gcc   1536
Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
            500                 505                 510

ccc atc gag aaa acc atc tcc aaa gcc aaa ggg cag ccc cga gaa cca   1584
Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
        515                 520                 525

cag gtg tac acc ctg ccc cca tcc cgg gat gag ctg acc aag aac cag   1632
Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln
    530                 535                 540

gtc agc ctg acc tgc ctg gtc aaa ggc ttc tat ccc agc gac atc gcc   1680
Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
545                 550                 555                 560

gtg gag tgg gag agc aat ggg cag ccg gag aac aac tac aag acc acg   1728
Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
                565                 570                 575

cct ccc gtg ctg gac tcc gac ggc tcc ttc ttc ctc tac agc aag ctc   1776
Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
            580                 585                 590

acc gtg gac aag agc agg tgg cag cag ggg aac gtc ttc tca tgc tcc   1824
Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
        595                 600                 605

gtg atg cat gag gct ctg cac aac cac tac acg cag aag agc ctc tcc   1872
Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
    610                 615                 620

ctg tct ccg ggt aaa                                              1887
Leu Ser Pro Gly Lys
625
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<210> 12

<211> 629
<212> PRT
<213> Artificial Sequence
<223> Description of Artificial Sequence: Ig-fusion protein

<400> 12

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Met Ala Trp Leu Val Leu Ser Gly Ile Leu Leu Cys Met Leu Gly Ala
  1               5                  10                  15

Gly Leu Gly Thr Ser Asp Leu Glu Asp Val Leu Pro Pro Ala Pro His
             20                  25                  30

Asn Cys Pro Asp Ile Cys Ile Cys Ala Ala Asp Val Leu Ser Cys Ala
         35                  40                  45

Gly Arg Gly Leu Gln Asp Leu Pro Val Ala Leu Pro Thr Thr Ala Ala
     50                  55                  60

Glu Leu Asp Leu Ser His Asn Ala Leu Lys Arg Leu His Pro Gly Trp
 65                  70                  75                  80

Leu Ala Pro Leu Ser Arg Leu Arg Ala Leu His Leu Gly Tyr Asn Lys
                 85                  90                  95

Leu Glu Val Leu Gly His Gly Ala Phe Thr Asn Ala Ser Gly Leu Arg
            100                 105                 110

Thr Leu Asp Leu Ser Ser Asn Met Leu Arg Met Leu His Thr His Asp
        115                 120                 125

Leu Asp Gly Leu Glu Glu Leu Glu Lys Leu Leu Leu Phe Asn Asn Ser
    130                 135                 140

Leu Met His Leu Asp Leu Asp Ala Phe Gln Gly Leu Arg Met Leu Ser
145                 150                 155                 160

His Leu Tyr Leu Ser Cys Asn Glu Leu Ser Ser Phe Ser Phe Asn His
                165                 170                 175

Leu His Gly Leu Gly Leu Thr Arg Leu Arg Thr Leu Asp Leu Ser Ser
            180                 185                 190

Asn Trp Leu Lys His Ile Ser Ile Pro Glu Leu Ala Ala Leu Pro Thr
        195                 200                 205

Tyr Leu Lys Asn Arg Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

Cys Ser Leu Tyr His Leu Leu Arg Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

Ala Leu His Asp Phe Glu Arg Glu Tyr Thr Cys Leu Val Phe Lys Val
                245                 250                 255

Ser Glu Ser Arg Val Arg Phe Phe Glu His Ser Arg Val Phe Lys Asn
            260                 265                 270

Cys Ser Val Ala Ala Ala Pro Gly Leu Glu Leu Pro Glu Glu Gln Leu
        275                 280                 285
```

```
His Ala Gln Val Gly Gln Ser Leu Arg Leu Phe Cys Asn Thr Ser Val
    290                 295                 300

Pro Ala Thr Arg Val Ala Trp Val Ser Pro Lys Asn Glu Leu Leu Val
305                 310                 315                 320

Ala Pro Ala Ser Gln Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

Leu Ala Ile Gly Arg Val Gln Glu Gln His Ala Gly Val Phe Val Cys
            340                 345                 350

Leu Ala Ser Gly Pro Arg Leu His His Asn Gln Thr Leu Glu Tyr Asn
        355                 360                 365

Val Ser Val Gln Lys Ala Arg Pro Glu Pro Glu Thr Phe Asn Thr Ala
    370                 375                 380

Ala Ala Asp Pro Ile Glu Gly Arg Gly Gly Gly Gly Gly Asp Pro Lys
385                 390                 395                 400

Ser Cys Asp Lys Pro His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu
                405                 410                 415

Leu Gly Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr
            420                 425                 430

Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val
        435                 440                 445

Ser His Glu Asp Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val
    450                 455                 460

Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser
465                 470                 475                 480

Thr Tyr Arg Val Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu
                485                 490                 495

Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala
            500                 505                 510

Pro Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro
        515                 520                 525

Gln Val Tyr Thr Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln
    530                 535                 540

Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala
545                 550                 555                 560

Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr
                565                 570                 575

Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu
            580                 585                 590

Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser
        595                 600                 605

Val Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser
```

610 615 620

Leu Ser Pro Gly Lys
625

<210> 13
<211> 1476
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)..(1476)

<400> 13

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atg caa ccc cag cgt gac ctg cga ggc ctc tgg ctc ctg ctg ctc tcc   48
Met Gln Pro Gln Arg Asp Leu Arg Gly Leu Trp Leu Leu Leu Leu Ser
  1               5                  10                  15

gtg ttc ctg ctt ctc ttt gag gta gcc agg gcc ggc cga tct gtg gtt   96
Val Phe Leu Leu Leu Phe Glu Val Ala Arg Ala Gly Arg Ser Val Val
             20                  25                  30

agt tgt ccc gcc aac tgc ctg tgc gcc agc aac atc ctc agc tgc tcc   144
Ser Cys Pro Ala Asn Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
         35                  40                  45

aag cag cag ctg ccc aat gtg ccc caa tct ttg ccc agc tac aca gca   192
Lys Gln Gln Leu Pro Asn Val Pro Gln Ser Leu Pro Ser Tyr Thr Ala
     50                  55                  60

ctg ctg gac ctc agc cac aac aac ttg agc agg ctg cgg gcc gag tgg   240
Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
 65                  70                  75                  80

acc ccc acc cgg ctg acc aac ctg cac tcc ctg ctg ctg agc cac aac   288
Thr Pro Thr Arg Leu Thr Asn Leu His Ser Leu Leu Leu Ser His Asn
                 85                  90                  95

cac ctg aac ttc atc tcc tcc gag gcc ttc gtc ccc gta ccc aac ctt   336
His Leu Asn Phe Ile Ser Ser Glu Ala Phe Val Pro Val Pro Asn Leu
            100                 105                 110

agg tac ttg gac ctc tcc tcc aac cat ctt cac acg ctg gat gag ttc   384
Arg Tyr Leu Asp Leu Ser Ser Asn His Leu His Thr Leu Asp Glu Phe
        115                 120                 125

ctg ttc agc gac ctg cag gcg ctg gaa gtg ctg ttg ctc tac aat aac   432
Leu Phe Ser Asp Leu Gln Ala Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140

cac att gtg gtg gtg gac cgg aat gcc ttt gag gac atg gcc cag ctg   480
His Ile Val Val Val Asp Arg Asn Ala Phe Glu Asp Met Ala Gln Leu
145                 150                 155                 160

cag aaa ctc tac tta agc cag aat cag atc tct cgc ttt cct gtg gaa   528
Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Val Glu
                165                 170                 175
```

```
ctg atc aag gat ggg aac aaa tta ccc aaa ctg atg ctc ttg gat ctg   576
Leu Ile Lys Asp Gly Asn Lys Leu Pro Lys Leu Met Leu Leu Asp Leu
            180                 185                 190

tcc tcc aac aag ctg aag aag ttg ccc ctg act gac ctg cag aaa ttg   624
Ser Ser Asn Lys Leu Lys Lys Leu Pro Leu Thr Asp Leu Gln Lys Leu
        195                 200                 205

cca gcc tgg gtc aag aat ggg cta tac ctg cat aac aac ccc ttg gag   672
Pro Ala Trp Val Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Glu
    210                 215                 220

tgc gac tgc aag ctc tac cag ctc ttt tcg cac tgg cag tac cgg cag   720
Cys Asp Cys Lys Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

ctg agc tct gtg atg gac ttc cag gag gac ctg tac tgc atg cac tcc   768
Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met His Ser
                245                 250                 255


aag aag ctg cac aac atc ttc agc ctg gat ttc ttc aat tgc agc gag   816
Lys Lys Leu His Asn Ile Phe Ser Leu Asp Phe Phe Asn Cys Ser Glu
            260                 265                 270

tac aag gaa agt gcc tgg gag gct cac ctg gga gac acc ttg acc atc   864
Tyr Lys Glu Ser Ala Trp Glu Ala His Leu Gly Asp Thr Leu Thr Ile
        275                 280                 285

agg tgt gac acc aaa cag caa ggc atg acc aaa gtg tgg gtg tcc cca   912
Arg Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Ser Pro
    290                 295                 300

agc aat gaa cag gtg cta agt cag ggg tcc aat ggc tcg gtg agc gtg   960
Ser Asn Glu Gln Val Leu Ser Gln Gly Ser Asn Gly Ser Val Ser Val
305                 310                 315                 320

agg aat ggc gac ctt ttt ttt aaa aag gtg cag gtc gag gat ggg ggt  1008
Arg Asn Gly Asp Leu Phe Phe Lys Lys Val Gln Val Glu Asp Gly Gly
                325                 330                 335

gtg tat acc tgt tac gcc atg ggg gag act ttc aac gag aca ctg tct  1056
Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu Ser
            340                 345                 350

gtg gag ttg aaa gtg tat aac ttc acc ttg cac gga cac cat gac acc  1104
Val Glu Leu Lys Val Tyr Asn Phe Thr Leu His Gly His His Asp Thr
        355                 360                 365

ctc aac aca gcc tac act acc ctg gtg ggc tgt atc ctc agt gtg gtt  1152
Leu Asn Thr Ala Tyr Thr Thr Leu Val Gly Cys Ile Leu Ser Val Val
    370                 375                 380

ctg gtc ctc ata tac ttg tac ctc acc cct tgc cgc tgc tgg tgt cgg  1200
Leu Val Leu Ile Tyr Leu Tyr Leu Thr Pro Cys Arg Cys Trp Cys Arg
385                 390                 395                 400

ggt gtg gag aaa cct tcc agc cac caa gga gat agc ctc agc tct tct  1248
Gly Val Glu Lys Pro Ser Ser His Gln Gly Asp Ser Leu Ser Ser Ser
                405                 410                 415
```

```
atg ctc agt acc aca ccc aac cac gac cct atg gct ggt ggg gac aaa   1296
Met Leu Ser Thr Thr Pro Asn His Asp Pro Met Ala Gly Gly Asp Lys
            420                 425                 430

gat gat ggt ttt gac cgg cgg gtg gcc ttc ctg gaa cct gct gga ccc   1344
Asp Asp Gly Phe Asp Arg Arg Val Ala Phe Leu Glu Pro Ala Gly Pro
        435                 440                 445

ggg cag ggt caa aat ggc aaa ctc aag cca ggc aac act ctg ccg gtg   1392
Gly Gln Gly Gln Asn Gly Lys Leu Lys Pro Gly Asn Thr Leu Pro Val
    450                 455                 460

ccc gaa gct aca ggc aag ggc caa cgg agg atg tcc gat cca gag tcg   1440
Pro Glu Ala Thr Gly Lys Gly Gln Arg Arg Met Ser Asp Pro Glu Ser
465                 470                 475                 480

gtc agc tcg gtc ttt tct gat aca ccc att gtg gtg                  1476
Val Ser Ser Val Phe Ser Asp Thr Pro Ile Val Val
                485                 490
```

<210> 14
<211> 492
<212> PRT
<213> Mus musculus

<400> 14

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Met Gln Pro Gln Arg Asp Leu Arg Gly Leu Trp Leu Leu Leu Leu Ser
  1               5                  10                  15

Val Phe Leu Leu Leu Phe Glu Val Ala Arg Ala Gly Arg Ser Val Val
            20                  25                  30

Ser Cys Pro Ala Asn Cys Leu Cys Ala Ser Asn Ile Leu Ser Cys Ser
        35                  40                  45

Lys Gln Gln Leu Pro Asn Val Pro Gln Ser Leu Pro Ser Tyr Thr Ala
    50                  55                  60

Leu Leu Asp Leu Ser His Asn Asn Leu Ser Arg Leu Arg Ala Glu Trp
65                  70                  75                  80

Thr Pro Thr Arg Leu Thr Asn Leu His Ser Leu Leu Leu Ser His Asn
                85                  90                  95

His Leu Asn Phe Ile Ser Ser Glu Ala Phe Val Pro Val Pro Asn Leu
            100                 105                 110

Arg Tyr Leu Asp Leu Ser Ser Asn His Leu His Thr Leu Asp Glu Phe
        115                 120                 125

Leu Phe Ser Asp Leu Gln Ala Leu Glu Val Leu Leu Leu Tyr Asn Asn
    130                 135                 140

His Ile Val Val Val Asp Arg Asn Ala Phe Glu Asp Met Ala Gln Leu
145                 150                 155                 160

Gln Lys Leu Tyr Leu Ser Gln Asn Gln Ile Ser Arg Phe Pro Val Glu
                165                 170                 175

Leu Ile Lys Asp Gly Asn Lys Leu Pro Lys Leu Met Leu Leu Asp Leu
```

```
            180                 185                 190

Ser Ser Asn Lys Leu Lys Lys Leu Pro Leu Thr Asp Leu Gln Lys Leu
        195                 200                 205

Pro Ala Trp Val Lys Asn Gly Leu Tyr Leu His Asn Asn Pro Leu Glu
    210                 215                 220

Cys Asp Cys Lys Leu Tyr Gln Leu Phe Ser His Trp Gln Tyr Arg Gln
225                 230                 235                 240

Leu Ser Ser Val Met Asp Phe Gln Glu Asp Leu Tyr Cys Met His Ser
                245                 250                 255

Lys Lys Leu His Asn Ile Phe Ser Leu Asp Phe Phe Asn Cys Ser Glu
            260                 265                 270

Tyr Lys Glu Ser Ala Trp Glu Ala His Leu Gly Asp Thr Leu Thr Ile
        275                 280                 285

Arg Cys Asp Thr Lys Gln Gln Gly Met Thr Lys Val Trp Val Ser Pro
    290                 295                 300

Ser Asn Glu Gln Val Leu Ser Gln Gly Ser Asn Gly Ser Val Ser Val
305                 310                 315                 320

Arg Asn Gly Asp Leu Phe Phe Lys Lys Val Gln Val Glu Asp Gly Gly
                325                 330                 335

Val Tyr Thr Cys Tyr Ala Met Gly Glu Thr Phe Asn Glu Thr Leu Ser
            340                 345                 350

Val Glu Leu Lys Val Tyr Asn Phe Thr Leu His Gly His His Asp Thr
        355                 360                 365

Leu Asn Thr Ala Tyr Thr Thr Leu Val Gly Cys Ile Leu Ser Val Val
    370                 375                 380

Leu Val Leu Ile Tyr Leu Tyr Leu Thr Pro Cys Arg Cys Trp Cys Arg
385                 390                 395                 400

Gly Val Glu Lys Pro Ser Ser His Gln Gly Asp Ser Leu Ser Ser Ser
                405                 410                 415

Met Leu Ser Thr Thr Pro Asn His Asp Pro Met Ala Gly Gly Asp Lys
            420                 425                 430

Asp Asp Gly Phe Asp Arg Arg Val Ala Phe Leu Glu Pro Ala Gly Pro
        435                 440                 445

Gly Gln Gly Gln Asn Gly Lys Leu Lys Pro Gly Asn Thr Leu Pro Val
    450                 455                 460

Pro Glu Ala Thr Gly Lys Gly Gln Arg Arg Met Ser Asp Pro Glu Ser
465                 470                 475                 480

Val Ser Ser Val Phe Ser Asp Thr Pro Ile Val Val
                485                 490
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<210> 15
<211> 1557
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)..(1557)

<400> 15

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atg tcg tta agg ttc cac aca ctg ccc acc ctg cct aga gct gtc aaa   48
Met Ser Leu Arg Phe His Thr Leu Pro Thr Leu Pro Arg Ala Val Lys
  1               5                  10                  15

ccg ggt tgc aga gag ctg ctg tgt ctg ttg gtg atc gca gtg atg gtg   96
Pro Gly Cys Arg Glu Leu Leu Cys Leu Leu Val Ile Ala Val Met Val
            20                  25                  30

agc ccc agc gcc tca gga atg tgc ccc act gct tgc atc tgt gcc acc   144
Ser Pro Ser Ala Ser Gly Met Cys Pro Thr Ala Cys Ile Cys Ala Thr
        35                  40                  45

gac att gtc agc tgc acc aac aaa aac cta tct aag gtg ccc ggg aac   192
Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly Asn
    50                  55                  60

ctt ttc aga ctg att aaa aga ctg gat ctg agc tat aac aga atc gga   240
Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile Gly
65                  70                  75                  80

ctg ttg gat gcc gac tgg atc ccg gtg tcg ttt gtc aag ctg agc acc   288
Leu Leu Asp Ala Asp Trp Ile Pro Val Ser Phe Val Lys Leu Ser Thr
                85                  90                  95

tta att ctt cgc cac aac aac atc acc agc atc tcc acg ggc agt ttc   336
Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser Phe
            100                 105                 110

tcc aca acc cca aat tta aag tgt ctg gac tta tca tcc aat agg ctg   384
Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Arg Leu
        115                 120                 125

aag tcg gta aag agt gcc aca ttc caa gag ctg aag gct ctg gaa gta   432
Lys Ser Val Lys Ser Ala Thr Phe Gln Glu Leu Lys Ala Leu Glu Val
    130                 135                 140

ctg ctg ctg tac aac aac cac att tcc tat ctg gac ccc gca gcg ttc   480
Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ala Ala Phe
145                 150                 155                 160

ggg ggg ctt tcc cac ttg cag aaa ctc tat ctg agt ggg aac ttt ctc   528
Gly Gly Leu Ser His Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe Leu
                165                 170                 175

aca cag ttc cct atg gat ttg tat act ggg agg ttc aag ctg gct gat   576
Thr Gln Phe Pro Met Asp Leu Tyr Thr Gly Arg Phe Lys Leu Ala Asp
            180                 185                 190

ctg aca ttt tta gat gtt tcc tat aat cga atc cct tcc ata ccg atg   624
Leu Thr Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Ile Pro Met
        195                 200                 205
```

```
cac cat ata aac tta gtg ccg ggg aga cag ctg aga ggc atc tac ctt   672
His His Ile Asn Leu Val Pro Gly Arg Gln Leu Arg Gly Ile Tyr Leu
    210                 215                 220

cac ggg aac cca ttt gta tgt gac tgt tct ctg tac tcg ttg ctg atc   720
His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu Ile
225                 230                 235                 240

ttt tgg tac cgt agg cac ttt agc tcc gtg atg gat ttt aag aat gac   768
Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn Asp
                245                 250                 255

tat acc tgt cgc ctg tgg tct gac tcc agg cac tcc cac cag ctg cag   816
Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser His Gln Leu Gln
            260                 265                 270

ctg ctc cag gag agc ttt ctg aac tgt tct tac agc gtt atc aac ggc   864
Leu Leu Gln Glu Ser Phe Leu Asn Cys Ser Tyr Ser Val Ile Asn Gly
        275                 280                 285

tcc ttc cac gca ctt ggc ttt atc cac gag gct cag gtt ggg gag agg   912
Ser Phe His Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu Arg
    290                 295                 300

gcg atc gtc cac tgt gac agc aag act ggc aat gga aat act gat ttc   960
Ala Ile Val His Cys Asp Ser Lys Thr Gly Asn Gly Asn Thr Asp Phe
305                 310                 315                 320

atc tgg gtc ggt ccc gat aac agg ctg ctg gag cca gat aaa gac atg   1008
Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Asp Met
                325                 330                 335

ggg aac ttt cgt gtg ttt tac aac gga agt ctg gtc ata gag aac cct   1056
Gly Asn Phe Arg Val Phe Tyr Asn Gly Ser Leu Val Ile Glu Asn Pro
            340                 345                 350

ggc ttt gag gac gcc ggg gta tat tct tgt atc gca atg aac agg cag   1104
Gly Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Arg Gln
        355                 360                 365

cgg ctg tta aac gag acg gtg gat atc atg atc aac gtg agc aat ttc   1152
Arg Leu Leu Asn Glu Thr Val Asp Ile Met Ile Asn Val Ser Asn Phe
    370                 375                 380

acc ata aac aga tcc cac gcc cac gag gcg ttt aac acg gcc ttt acc   1200
Thr Ile Asn Arg Ser His Ala His Glu Ala Phe Asn Thr Ala Phe Thr
385                 390                 395                 400

acc ctg gct gcc tgc gtg gcc agt ata gtt cta gtg cta ctg tat ctg   1248
Thr Leu Ala Ala Cys Val Ala Ser Ile Val Leu Val Leu Leu Tyr Leu
                405                 410                 415

tac ctg acg ccg tgc cca tgc aaa tgc aaa gcc aag aga cag aaa aac   1296
Tyr Leu Thr Pro Cys Pro Cys Lys Cys Lys Ala Lys Arg Gln Lys Asn
            420                 425                 430

acg ctg agc caa agc agt gcc cac tcg tcc att ctc agt cct ggc ccc   1344
Thr Leu Ser Gln Ser Ser Ala His Ser Ser Ile Leu Ser Pro Gly Pro
        435                 440                 445
```

```
act ggc gat gcc tct gct gac gat cgg aag gca ggt aaa aga gtc gtg   1392
Thr Gly Asp Ala Ser Ala Asp Asp Arg Lys Ala Gly Lys Arg Val Val
    450                 455                 460

ttt ctg gag ccc ctg aag gac acg gcg gcc gga cag aat ggc aaa gtc   1440
Phe Leu Glu Pro Leu Lys Asp Thr Ala Ala Gly Gln Asn Gly Lys Val
465                 470                 475                 480

aag ctt ttc ccc agt gag acc gtt ata gcc gag ggc atc tta aag tcc   1488
Lys Leu Phe Pro Ser Glu Thr Val Ile Ala Glu Gly Ile Leu Lys Ser
            485                 490                 495

acc agg gca aag tct gac tca gac tca gtc aat tcc gtg ttc tca gac   1536
Thr Arg Ala Lys Ser Asp Ser Asp Ser Val Asn Ser Val Phe Ser Asp
        500                 505                 510

aca ccc ttt gtg gca tcc act                                      1557
Thr Pro Phe Val Ala Ser Thr
    515
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<210> 16
<211> 519
<212> PRT
<213> Mus musculus

<400> 16

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Met Ser Leu Arg Phe His Thr Leu Pro Thr Leu Pro Arg Ala Val Lys
  1               5                  10                  15

Pro Gly Cys Arg Glu Leu Leu Cys Leu Leu Val Ile Ala Val Met Val
            20                  25                  30

Ser Pro Ser Ala Ser Gly Met Cys Pro Thr Ala Cys Ile Cys Ala Thr
        35                  40                  45

Asp Ile Val Ser Cys Thr Asn Lys Asn Leu Ser Lys Val Pro Gly Asn
    50                  55                  60

Leu Phe Arg Leu Ile Lys Arg Leu Asp Leu Ser Tyr Asn Arg Ile Gly
65                  70                  75                  80

Leu Leu Asp Ala Asp Trp Ile Pro Val Ser Phe Val Lys Leu Ser Thr
                85                  90                  95

Leu Ile Leu Arg His Asn Asn Ile Thr Ser Ile Ser Thr Gly Ser Phe
            100                 105                 110

Ser Thr Thr Pro Asn Leu Lys Cys Leu Asp Leu Ser Ser Asn Arg Leu
        115                 120                 125

Lys Ser Val Lys Ser Ala Thr Phe Gln Glu Leu Lys Ala Leu Glu Val
    130                 135                 140

Leu Leu Leu Tyr Asn Asn His Ile Ser Tyr Leu Asp Pro Ala Ala Phe
145                 150                 155                 160

Gly Gly Leu Ser His Leu Gln Lys Leu Tyr Leu Ser Gly Asn Phe Leu
                165                 170                 175

Thr Gln Phe Pro Met Asp Leu Tyr Thr Gly Arg Phe Lys Leu Ala Asp
```

```
            180                 185                 190

Leu Thr Phe Leu Asp Val Ser Tyr Asn Arg Ile Pro Ser Ile Pro Met
        195                 200                 205

His His Ile Asn Leu Val Pro Gly Arg Gln Leu Arg Gly Ile Tyr Leu
    210                 215                 220

His Gly Asn Pro Phe Val Cys Asp Cys Ser Leu Tyr Ser Leu Leu Ile
225                 230                 235                 240

Phe Trp Tyr Arg Arg His Phe Ser Ser Val Met Asp Phe Lys Asn Asp
                245                 250                 255

Tyr Thr Cys Arg Leu Trp Ser Asp Ser Arg His Ser His Gln Leu Gln
            260                 265                 270

Leu Leu Gln Glu Ser Phe Leu Asn Cys Ser Tyr Ser Val Ile Asn Gly
        275                 280                 285

Ser Phe His Ala Leu Gly Phe Ile His Glu Ala Gln Val Gly Glu Arg
    290                 295                 300

Ala Ile Val His Cys Asp Ser Lys Thr Gly Asn Gly Asn Thr Asp Phe
305                 310                 315                 320

Ile Trp Val Gly Pro Asp Asn Arg Leu Leu Glu Pro Asp Lys Asp Met
                325                 330                 335

Gly Asn Phe Arg Val Phe Tyr Asn Gly Ser Leu Val Ile Glu Asn Pro
            340                 345                 350

Gly Phe Glu Asp Ala Gly Val Tyr Ser Cys Ile Ala Met Asn Arg Gln
        355                 360                 365

Arg Leu Leu Asn Glu Thr Val Asp Ile Met Ile Asn Val Ser Asn Phe
    370                 375                 380

Thr Ile Asn Arg Ser His Ala His Glu Ala Phe Asn Thr Ala Phe Thr
385                 390                 395                 400

Thr Leu Ala Ala Cys Val Ala Ser Ile Val Leu Val Leu Leu Tyr Leu
                405                 410                 415

Tyr Leu Thr Pro Cys Pro Cys Lys Cys Lys Ala Lys Arg Gln Lys Asn
            420                 425                 430

Thr Leu Ser Gln Ser Ser Ala His Ser Ser Ile Leu Ser Pro Gly Pro
        435                 440                 445

Thr Gly Asp Ala Ser Ala Asp Asp Arg Lys Ala Gly Lys Arg Val Val
    450                 455                 460

Phe Leu Glu Pro Leu Lys Asp Thr Ala Ala Gly Gln Asn Gly Lys Val
465                 470                 475                 480

Lys Leu Phe Pro Ser Glu Thr Val Ile Ala Glu Gly Ile Leu Lys Ser
                485                 490                 495

Thr Arg Ala Lys Ser Asp Ser Asp Ser Val Asn Ser Val Phe Ser Asp
            500                 505                 510
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Thr Pro Phe Val Ala Ser Thr
515

<210> 17
<211> 1524
<212> DNA
<213> Mus musculus

<220>
<221> CDS
<222> (1)..(1524)

<400> 17
atg gcc tgg cta gtg cta tca ggt ata cta cta tgc atg ttg ggt gct 48
Met Ala Trp Leu Val Leu Ser Gly Ile Leu Leu Cys Met Leu Gly Ala
1 5 10 15

gga ttg ggc act tca gac ttg gag gat gtt ctg cct cct gct ccc cac 96
Gly Leu Gly Thr Ser Asp Leu Glu Asp Val Leu Pro Pro Ala Pro His
20 25 30

aac tgc ccc gat ata tgc atc tgt gct gcc gat gtg ttg agc tgt gcg 144
Asn Cys Pro Asp Ile Cys Ile Cys Ala Ala Asp Val Leu Ser Cys Ala
35 40 45

ggc cgt ggg tta cag gac ttg ccg gta gca ctg cct acc act gct gca 192
Gly Arg Gly Leu Gln Asp Leu Pro Val Ala Leu Pro Thr Thr Ala Ala
50 55 60

gaa ctc gat ttg agc cac aac gca ctc aaa cgc ctg cac ccg ggg tgg 240
Glu Leu Asp Leu Ser His Asn Ala Leu Lys Arg Leu His Pro Gly Trp
65 70 75 80

tta gcg ccc ctc tcc cgg ctg cgt gcc ttg cac cta ggc tat aat aag 288
Leu Ala Pro Leu Ser Arg Leu Arg Ala Leu His Leu Gly Tyr Asn Lys
85 90 95

ctg gaa gtc ctg ggc cat ggt gcg ttc acc aat gcc agt ggc ctg agg 336
Leu Glu Val Leu Gly His Gly Ala Phe Thr Asn Ala Ser Gly Leu Arg
100 105 110

aca ctt gac ctg tcc tct aat atg tta agg atg ctc cat acc cat gac 384
Thr Leu Asp Leu Ser Ser Asn Met Leu Arg Met Leu His Thr His Asp
115 120 125

ctg gat ggc ctg gag gag ctg gag aag tta ctt ctg ttc aat aac agc 432
Leu Asp Gly Leu Glu Glu Leu Glu Lys Leu Leu Leu Phe Asn Asn Ser
130 135 140

ctg atg cac ttg gac ctg gat gcc ttc cag ggc ctg cgc atg ctt agc 480
Leu Met His Leu Asp Leu Asp Ala Phe Gln Gly Leu Arg Met Leu Ser
145 150 155 160

cac ctc tat ctc agc tgc aac gag ctc tcc tct ttc tct ttc aac cac 528
His Leu Tyr Leu Ser Cys Asn Glu Leu Ser Ser Phe Ser Phe Asn His
165 170 175

```
ttg cac ggt ctg ggg tta acc cgc ctg cgg act ctg gac ctc tcc tcc   576
Leu His Gly Leu Gly Leu Thr Arg Leu Arg Thr Leu Asp Leu Ser Ser
            180                 185                 190

aac tgg ctg aaa cat atc tcc atc cct gag ttg gct gca ctg cca act   624
Asn Trp Leu Lys His Ile Ser Ile Pro Glu Leu Ala Ala Leu Pro Thr
        195                 200                 205

tat ctc aag aac agg ctc tac ctg cac aac aac ccg ctg ccc tgt gac   672
Tyr Leu Lys Asn Arg Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

tgc agc ctc tac cac ctg ctc cgg cgc tgg cac cag cgg ggc ctg agt   720
Cys Ser Leu Tyr His Leu Leu Arg Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

gcc ctg cat gat ttt gaa cgc gag tac aca tgc ttg gtc ttt aag gtg   768
Ala Leu His Asp Phe Glu Arg Glu Tyr Thr Cys Leu Val Phe Lys Val
                245                 250                 255

tca gag tcc cga gtg cgc ttt ttt gag cac agc cgg gtc ttc aag aac   816
Ser Glu Ser Arg Val Arg Phe Phe Glu His Ser Arg Val Phe Lys Asn
            260                 265                 270

tgc tct gtg gct gca gct cca ggc tta gag ctg cct gaa gag cag ctg   864
Cys Ser Val Ala Ala Ala Pro Gly Leu Glu Leu Pro Glu Glu Gln Leu
        275                 280                 285

cac gcg cag gtg ggc cag tcc ctg agg ctc ttc tgc aac acc agt gtg   912
His Ala Gln Val Gly Gln Ser Leu Arg Leu Phe Cys Asn Thr Ser Val
    290                 295                 300

cct gcc act cgg gtg gcc tgg gtc tcc ccg aag aat gag ctg ctt gtg   960
Pro Ala Thr Arg Val Ala Trp Val Ser Pro Lys Asn Glu Leu Leu Val
305                 310                 315                 320

gcg cca gcc tct cag gat ggt agc atc gct gtg ttg gct gat ggc agc   1008
Ala Pro Ala Ser Gln Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

tta gcc ata ggc agg gtg caa gag cag cac gca ggc gtc ttt gtg tgc   1056
Leu Ala Ile Gly Arg Val Gln Glu Gln His Ala Gly Val Phe Val Cys
            340                 345                 350

ctg gcc agt ggg ccc cgc ctg cac cac aac cag aca ctt gag tac aat   1104
Leu Ala Ser Gly Pro Arg Leu His His Asn Gln Thr Leu Glu Tyr Asn
        355                 360                 365

gtg agt gtg caa aag gct cgc ccc gag cca gag act ttc aac aca ggc   1152
Val Ser Val Gln Lys Ala Arg Pro Glu Pro Glu Thr Phe Asn Thr Gly
    370                 375                 380

ttt acc acc ctg ctg ggc tgt att gtg ggc ctg gtg ctg gtg ttg ctc   1200
Phe Thr Thr Leu Leu Gly Cys Ile Val Gly Leu Val Leu Val Leu Leu
385                 390                 395                 400

tac ttg ttt gca cca ccc tgt cgt ggc tgc tgt cac tgc tgt cag cgg   1248
Tyr Leu Phe Ala Pro Pro Cys Arg Gly Cys Cys His Cys Cys Gln Arg
                405                 410                 415

gcc tgc cgc aac cgt tgc tgg ccc cgg gca tcc agt cca ctc cag gag   1296
```

```
Ala Cys Arg Asn Arg Cys Trp Pro Arg Ala Ser Ser Pro Leu Gln Glu
            420                 425                 430

ctg agc gca cag tcc tcc atg ctc agc act acg cca cca gat gca ccc   1344
Leu Ser Ala Gln Ser Ser Met Leu Ser Thr Thr Pro Pro Asp Ala Pro
        435                 440                 445

agc cgc aag gcc agt gtc cac aag cat gtg gtc ttc ctg gag ccg ggc   1392
Ser Arg Lys Ala Ser Val His Lys His Val Val Phe Leu Glu Pro Gly
    450                 455                 460

aag aag ggc ctc aat ggc cgt gtg cag ctc gca gta gct gaa gac ttc   1440
Lys Lys Gly Leu Asn Gly Arg Val Gln Leu Ala Val Ala Glu Asp Phe
465                 470                 475                 480

gat ctg tgc aac ccc atg ggc ttg caa ctc aag gct ggc tct gaa tca   1488
Asp Leu Cys Asn Pro Met Gly Leu Gln Leu Lys Ala Gly Ser Glu Ser
                485                 490                 495

gcc agt tcc acg ggc tca gag ggt ctc gtg atg agc                   1524
Ala Ser Ser Thr Gly Ser Glu Gly Leu Val Met Ser
            500                 505
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<210> 18
<211> 508
<212> PRT
<213> Mus musculus

<400> 18

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Met Ala Trp Leu Val Leu Ser Gly Ile Leu Leu Cys Met Leu Gly Ala
  1               5                  10                  15

Gly Leu Gly Thr Ser Asp Leu Glu Asp Val Leu Pro Pro Ala Pro His
            20                  25                  30

Asn Cys Pro Asp Ile Cys Ile Cys Ala Ala Asp Val Leu Ser Cys Ala
        35                  40                  45

Gly Arg Gly Leu Gln Asp Leu Pro Val Ala Leu Pro Thr Thr Ala Ala
    50                  55                  60

Glu Leu Asp Leu Ser His Asn Ala Leu Lys Arg Leu His Pro Gly Trp
65                  70                  75                  80

Leu Ala Pro Leu Ser Arg Leu Arg Ala Leu His Leu Gly Tyr Asn Lys
                85                  90                  95

Leu Glu Val Leu Gly His Gly Ala Phe Thr Asn Ala Ser Gly Leu Arg
            100                 105                 110

Thr Leu Asp Leu Ser Ser Asn Met Leu Arg Met Leu His Thr His Asp
        115                 120                 125

Leu Asp Gly Leu Glu Glu Leu Glu Lys Leu Leu Leu Phe Asn Asn Ser
    130                 135                 140

Leu Met His Leu Asp Leu Asp Ala Phe Gln Gly Leu Arg Met Leu Ser
145                 150                 155                 160
```

```
His Leu Tyr Leu Ser Cys Asn Glu Leu Ser Ser Phe Ser Phe Asn His
                165                 170                 175

Leu His Gly Leu Gly Leu Thr Arg Leu Arg Thr Leu Asp Leu Ser Ser
            180                 185                 190

Asn Trp Leu Lys His Ile Ser Ile Pro Glu Leu Ala Ala Leu Pro Thr
        195                 200                 205

Tyr Leu Lys Asn Arg Leu Tyr Leu His Asn Asn Pro Leu Pro Cys Asp
    210                 215                 220

Cys Ser Leu Tyr His Leu Leu Arg Arg Trp His Gln Arg Gly Leu Ser
225                 230                 235                 240

Ala Leu His Asp Phe Glu Arg Glu Tyr Thr Cys Leu Val Phe Lys Val
                245                 250                 255

Ser Glu Ser Arg Val Arg Phe Phe Glu His Ser Arg Val Phe Lys Asn
            260                 265                 270

Cys Ser Val Ala Ala Ala Pro Gly Leu Glu Leu Pro Glu Glu Gln Leu
        275                 280                 285

His Ala Gln Val Gly Gln Ser Leu Arg Leu Phe Cys Asn Thr Ser Val
    290                 295                 300

Pro Ala Thr Arg Val Ala Trp Val Ser Pro Lys Asn Glu Leu Leu Val
305                 310                 315                 320

Ala Pro Ala Ser Gln Asp Gly Ser Ile Ala Val Leu Ala Asp Gly Ser
                325                 330                 335

Leu Ala Ile Gly Arg Val Gln Glu Gln His Ala Gly Val Phe Val Cys
            340                 345                 350

Leu Ala Ser Gly Pro Arg Leu His His Asn Gln Thr Leu Glu Tyr Asn
        355                 360                 365

Val Ser Val Gln Lys Ala Arg Pro Glu Pro Glu Thr Phe Asn Thr Gly
    370                 375                 380

Phe Thr Thr Leu Leu Gly Cys Ile Val Gly Leu Val Leu Val Leu Leu
385                 390                 395                 400

Tyr Leu Phe Ala Pro Pro Cys Arg Gly Cys Cys His Cys Cys Gln Arg
                405                 410                 415

Ala Cys Arg Asn Arg Cys Trp Pro Arg Ala Ser Ser Pro Leu Gln Glu
            420                 425                 430

Leu Ser Ala Gln Ser Ser Met Leu Ser Thr Thr Pro Pro Asp Ala Pro
        435                 440                 445

Ser Arg Lys Ala Ser Val His Lys His Val Val Phe Leu Glu Pro Gly
    450                 455                 460

Lys Lys Gly Leu Asn Gly Arg Val Gln Leu Ala Val Ala Glu Asp Phe
465                 470                 475                 480

Asp Leu Cys Asn Pro Met Gly Leu Gln Leu Lys Ala Gly Ser Glu Ser
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                485                 490                 495

Ala Ser Ser Thr Gly Ser Glu Gly Leu Val Met Ser
            500                 505
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<210> 19
<211> 3630
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)..(3630)

<400> 19

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atg cga ccc tcc ggg acg gcc ggg gca gcg ctc ctg gcg ctg ctg gct   48
Met Arg Pro Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala
  1               5                  10                  15

gcg ctc tgc ccg gcg agt cgg gct ctg gag gaa aag aaa gtt tgc caa   96
Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln
            20                  25                  30

ggc acg agt aac aag ctc acg cag ttg ggc act ttt gaa gat cat ttt   144
Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
        35                  40                  45

ctc agc ctc cag agg atg ttc aat aac tgt gag gtg gtc ctt ggg aat   192
Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn
    50                  55                  60

ttg gaa att acc tat gtg cag agg aat tat gat ctt tcc ttc tta aag   240
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65                  70                  75                  80

acc atc cag gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg   288
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                85                  90                  95

gag cga att cct ttg gaa aac ctg cag atc atc aga gga aat atg tac   336
Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr
            100                 105                 110

tac gaa aat tcc tat gcc tta gca gtc tta tct aac tat gat gca aat   384
Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn
        115                 120                 125

aaa acc gga ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg   432
Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130                 135                 140

cat ggc gcc gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag   480
His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu
145                 150                 155                 160

agc atc cag tgg cgg gac ata gtc agc agt gac ttt ctc agc aac atg   528
Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met
                165                 170                 175
```

```
tcg atg gac ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca   576
Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro
            180                 185                 190

agc tgt ccc aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag   624
Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln
        195                 200                 205

aaa ctg acc aaa atc atc tgt gcc cag cag tgc tcc ggg cgc tgc cgt   672
Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg
    210                 215                 220

ggc aag tcc ccc agt gac tgc tgc cac aac cag tgt gct gca ggc tgc   720
Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225                 230                 235                 240

aca ggc ccc cgg gag agc gac tgc ctg gtc tgc cgc aaa ttc cga gac   768
Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp
                245                 250                 255

gaa gcc acg tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc   816
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
            260                 265                 270

acc acg tac cag atg gat gtg aac ccc gag ggc aaa tac agc ttt ggt   864
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
        275                 280                 285

gcc acc tgc gtg aag aag tgt ccc cgt aat tat gtg gtg aca gat cac   912
Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
    290                 295                 300

ggc tcg tgc gtc cga gcc tgt ggg gcc gac agc tat gag atg gag gaa   960
Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu
305                 310                 315                 320

gac ggc gtc cgc aag tgt aag aag tgc gaa ggg cct tgc cgc aaa gtg   1008
Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val
                325                 330                 335

tgt aac gga ata ggt att ggt gaa ttt aaa gac tca ctc tcc ata aat   1056
Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn
            340                 345                 350

gct acg aat att aaa cac ttc aaa aac tgc acc tcc atc agt ggc gat   1104
Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp
        355                 360                 365

ctc cac atc ctg ccg gtg gca ttt agg ggt gac tcc ttc aca cat act   1152
Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr
    370                 375                 380

cct cct ctg gat cca cag gaa ctg gat att ctg aaa acc gta aag gaa   1200
Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu
385                 390                 395                 400

atc aca ggg ttt ttg ctg att cag gct tgg cct gaa aac agg acg gac   1248
Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp
                405                 410                 415

ctc cat gcc ttt gag aac cta gaa atc ata cgc ggc agg acc aag caa   1296
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Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
            420                 425                 430

cat ggt cag ttt tct ctt gca gtc gtc agc ctg aac ata aca tcc ttg   1344
His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu
        435                 440                 445

gga tta cgc tcc ctc aag gag ata agt gat gga gat gtg ata att tca   1392
Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
    450                 455                 460

gga aac aaa aat ttg tgc tat gca aat aca ata aac tgg aaa aaa ctg   1440
Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465                 470                 475                 480

ttt ggg acc tcc ggt cag aaa acc aaa att ata agc aac aga ggt gaa   1488
Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu
                485                 490                 495

aac agc tgc aag gcc aca ggc cag gtc tgc cat gcc ttg tgc tcc ccc   1536
Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro
            500                 505                 510

gag ggc tgc tgg ggc ccg gag ccc agg gac tgc gtc tct tgc cgg aat   1584
Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn
        515                 520                 525

gtc agc cga ggc agg gaa tgc gtg gac aag tgc aac ctt ctg gag ggt   1632
Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly
    530                 535                 540

gag cca agg gag ttt gtg gag aac tct gag tgc ata cag tgc cac cca   1680
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro
545                 550                 555                 560

gag tgc ctg cct cag gcc atg aac atc acc tgc aca gga cgg gga cca   1728
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro
                565                 570                 575

gac aac tgt atc cag tgt gcc cac tac att gac ggc ccc cac tgc gtc   1776
Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
            580                 585                 590

aag acc tgc ccg gca gga gtc atg gga gaa aac aac acc ctg gtc tgg   1824
Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp
        595                 600                 605

aag tac gca gac gcc ggc cat gtg tgc cac ctg tgc cat cca aac tgc   1872
Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys
    610                 615                 620

acc tac gga tgc act ggg cca ggt ctt gaa ggc tgt cca acg aat ggg   1920
Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly
625                 630                 635                 640

cct aag atc ccg tcc atc gcc act ggg atg gtg ggg gcc ctc ctc ttg   1968
Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu
                645                 650                 655

ctg ctg gtg gtg gcc ctg ggg atc ggc ctc ttc atg cga agg cgc cac   2016
Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His
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            660                 665                 670

atc gtt cgg aag cgc acg ctg cgg agg ctg ctg cag gag agg gag ctt   2064
Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu
        675                 680                 685

gtg gag cct ctt aca ccc agt gga gaa gct ccc aac caa gct ctc ttg   2112
Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala Leu Leu
    690                 695                 700

agg atc ttg aag gaa act gaa ttc aaa aag atc aaa gtg ctg ggc tcc   2160
Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser
705                 710                 715                 720

ggt gcg ttc ggc acg gtg tat aag gga ctc tgg atc cca gaa ggt gag   2208
Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu
                725                 730                 735

aaa gtt aaa att ccc gtc gct atc aag gaa tta aga gaa gca aca tct   2256
Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser
            740                 745                 750

ccg aaa gcc aac aag gaa atc ctc gat gaa gcc tac gtg atg gcc agc   2304
Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser
        755                 760                 765

gtg gac aac ccc cac gtg tgc cgc ctg ctg ggc atc tgc ctc acc tcc   2352
Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser
    770                 775                 780

acc gtg cag ctc atc acg cag ctc atg ccc ttc ggc tgc ctc ctg gac   2400
Thr Val Gln Leu Ile Thr Gln Leu Met Pro Phe Gly Cys Leu Leu Asp
785                 790                 795                 800

tat gtc cgg gaa cac aaa gac aat att ggc tcc cag tac ctg ctc aac   2448
Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn
                805                 810                 815

tgg tgt gtg cag atc gca aag ggc atg aac tac ttg gag gac cgt cgc   2496
Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg
            820                 825                 830

ttg gtg cac cgc gac ctg gca gcc agg aac gta ctg gtg aaa aca ccg   2544
Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro
        835                 840                 845

cag cat gtc aag atc aca gat ttt ggg ctg gcc aaa ctg ctg ggt gcg   2592
Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala
    850                 855                 860

gaa gag aaa gaa tac cat gca gaa gga ggc aaa gtg cct atc aag tgg   2640
Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp
865                 870                 875                 880

atg gca ttg gaa tca att tta cac aga atc tat acc cac cag agt gat   2688
Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp
                885                 890                 895

gtc tgg agc tac ggg gtg acc gtt tgg gag ttg atg acc ttt gga tcc   2736
Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser
            900                 905                 910
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aag cca tat gac gga atc cct gcc agc gag atc tcc tcc atc ctg gag   2784
Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu
        915                 920                 925

aaa gga gaa cgc ctc cct cag cca ccc ata tgt acc atc gat gtc tac   2832
Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr
    930                 935                 940

atg atc atg gtc aag tgc tgg atg ata gac gca gat agt cgc cca aag   2880
Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys
945                 950                 955                 960

ttc cgt gag ttg atc atc gaa ttc tcc aaa atg gcc cga gac ccc cag   2928
Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp Pro Gln
                965                 970                 975

cgc tac ctt gtc att cag ggg gat gaa aga atg cat ttg cca agt cct   2976
Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro
            980                 985                 990

aca gac tcc aac ttc tac cgt gcc ctg atg gat gaa gaa gac atg gac   3024
Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Asp
        995                 1000                1005

gac gtg gtg gat gcc gac gag tac ctc atc cca cag cag ggc ttc ttc   3072
Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe Phe
    1010                1015                1020

agc agc ccc tcc acg tca cgg act ccc ctc ctg agc tct ctg agt gca   3120
Ser Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala
1025                1030                1035                1040

acc agc aac aat tcc acc gtg gct tgc att gat aga aat ggg ctg caa   3168
Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asp Arg Asn Gly Leu Gln
                1045                1050                1055

agc tgt ccc atc aag gaa gac agc ttc ttg cag cga tac agc tca gac   3216
Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg Tyr Ser Ser Asp
            1060                1065                1070

ccc aca ggc gcc ttg act gag gac agc ata gac gac acc ttc ctc cca   3264
Pro Thr Gly Ala Leu Thr Glu Asp Ser Ile Asp Asp Thr Phe Leu Pro
        1075                1080                1085

gtg cct gaa tac ata aac cag tcc gtt ccc aaa agg ccc gct ggc tct   3312
Val Pro Glu Tyr Ile Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser
    1090                1095                1100

gtg cag aat cct gtc tat cac aat cag cct ctg aac ccc gcg ccc agc   3360
Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu Asn Pro Ala Pro Ser
1105                1110                1115                1120

aga gac cca cac tac cag gac ccc cac agc act gca gtg ggc aac ccc   3408
Arg Asp Pro His Tyr Gln Asp Pro His Ser Thr Ala Val Gly Asn Pro
                1125                1130                1135

gag tat ctc aac act gtc cag ccc acc tgt gtc aac agc aca ttc gac   3456
Glu Tyr Leu Asn Thr Val Gln Pro Thr Cys Val Asn Ser Thr Phe Asp
            1140                1145                1150
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agc cct gcc cac tgg gcc cag aaa ggc agc cac caa att agc ctg gac   3504
Ser Pro Ala His Trp Ala Gln Lys Gly Ser His Gln Ile Ser Leu Asp
       1155                1160                1165

aac cct gac tac cag cag gac ttc ttt ccc aag gaa gcc aag cca aat   3552
Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu Ala Lys Pro Asn
   1170                1175                1180

ggc atc ttt aag ggc tcc aca gct gaa aat gca gaa tac cta agg gtc   3600
Gly Ile Phe Lys Gly Ser Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val
1185                1190                1195                1200

gcg cca caa agc agt gaa ttt att gga gca                          3630
Ala Pro Gln Ser Ser Glu Phe Ile Gly Ala
               1205                1210
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Ala Leu Cys Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln
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Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
         35                  40                  45

Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn
     50                  55                  60

Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
 65                  70                  75                  80

Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                 85                  90                  95

Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr
            100                 105                 110

Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn
        115                 120                 125

Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130                 135                 140

His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu
145                 150                 155                 160

Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met
                165                 170                 175

Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro
            180                 185                 190

Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln
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        195                 200                 205

Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg
    210                 215                 220

Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225                 230                 235                 240

Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp
                245                 250                 255

Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
            260                 265                 270

Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
        275                 280                 285

Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
    290                 295                 300

Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu
305                 310                 315                 320

Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val
                325                 330                 335

Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn
            340                 345                 350

Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp
        355                 360                 365

Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr
    370                 375                 380

Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu
385                 390                 395                 400

Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp
                405                 410                 415

Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
            420                 425                 430

His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu
        435                 440                 445

Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
    450                 455                 460

Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465                 470                 475                 480

Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu
                485                 490                 495

Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro
            500                 505                 510

Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn
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        515                 520                 525

Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly
    530                 535                 540

Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro
545                 550                 555                 560

Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro
                565                 570                 575

Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
            580                 585                 590

Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp
        595                 600                 605

Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys
    610                 615                 620

Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly
625                 630                 635                 640

Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu
                645                 650                 655

Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His
            660                 665                 670

Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu
        675                 680                 685

Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala Leu Leu
    690                 695                 700

Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser
705                 710                 715                 720

Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu
                725                 730                 735

Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser
            740                 745                 750

Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser
        755                 760                 765

Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser
    770                 775                 780

Thr Val Gln Leu Ile Thr Gln Leu Met Pro Phe Gly Cys Leu Leu Asp
785                 790                 795                 800

Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn
                805                 810                 815

Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg
            820                 825                 830

Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro
        835                 840                 845
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Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala
     850                 855                 860

Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp
865                 870                 875                 880

Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp
                885                 890                 895

Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser
            900                 905                 910

Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu
        915                 920                 925

Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr
    930                 935                 940

Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys
945                 950                 955                 960

Phe Arg Glu Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp Pro Gln
                965                 970                 975

Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro
            980                 985                 990

Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Asp
        995                1000                1005

Asp Val Val Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe Phe
   1010                1015                1020

Ser Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala
025                1030                1035                1040

Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asp Arg Asn Gly Leu Gln
               1045                1050                1055

Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg Tyr Ser Ser Asp
           1060                1065                1070

Pro Thr Gly Ala Leu Thr Glu Asp Ser Ile Asp Asp Thr Phe Leu Pro
       1075                1080                1085

Val Pro Glu Tyr Ile Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser
   1090                1095                1100

Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu Asn Pro Ala Pro Ser
105                1110                1115                1120

Arg Asp Pro His Tyr Gln Asp Pro His Ser Thr Ala Val Gly Asn Pro
               1125                1130                1135

Glu Tyr Leu Asn Thr Val Gln Pro Thr Cys Val Asn Ser Thr Phe Asp
           1140                1145                1150

Ser Pro Ala His Trp Ala Gln Lys Gly Ser His Gln Ile Ser Leu Asp
       1155                1160                1165
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Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu Ala Lys Pro Asn
   1170                1175                1180

Gly Ile Phe Lys Gly Ser Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val
185                1190                1195                1200

Ala Pro Gln Ser Ser Glu Phe Ile Gly Ala
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gcccgagtcc ccgcctcgcc gccaacgcca caaccaccgc gcacggcccc ctgactccgt 120

ccagtattga tcgggagagc cggagcgagc tcttcgggga gcagcg atg cga ccc    175
                                                    Met Arg Pro
                                                      1

tcc ggg acg gcc ggg gca gcg ctc ctg gcg ctg ctg gct gcg ctc tgc    223
Ser Gly Thr Ala Gly Ala Ala Leu Leu Ala Leu Leu Ala Ala Leu Cys
      5                  10                  15

ccg gcg agt cgg gct ctg gag gaa aag aaa gtt tgc caa ggc acg agt    271
Pro Ala Ser Arg Ala Leu Glu Glu Lys Lys Val Cys Gln Gly Thr Ser
 20                  25                  30                  35

aac aag ctc acg cag ttg ggc act ttt gaa gat cat ttt ctc agc ctc    319
Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe Leu Ser Leu
                40                  45                  50

cag agg atg ttc aat aac tgt gag gtg gtc ctt ggg aat ttg gaa att    367
Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn Leu Glu Ile
            55                  60                  65

acc tat gtg cag agg aat tat gat ctt tcc ttc tta aag acc atc cag    415
Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys Thr Ile Gln
        70                  75                  80

gag gtg gct ggt tat gtc ctc att gcc ctc aac aca gtg gag cga att    463
Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val Glu Arg Ile
     85                  90                  95

cct ttg gaa aac ctg cag atc atc aga gga aat atg tac tac gaa aat    511
Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr Tyr Glu Asn
100                 105                 110                 115

tcc tat gcc tta gca gtc tta tct aac tat gat gca aat aaa acc gga    559
Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn Lys Thr Gly
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                120                 125                 130

ctg aag gag ctg ccc atg aga aat tta cag gaa atc ctg cat ggc gcc   607
Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu His Gly Ala
            135                 140                 145

gtg cgg ttc agc aac aac cct gcc ctg tgc aac gtg gag agc atc cag   655
Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu Ser Ile Gln
        150                 155                 160

tgg cgg gac ata gtc agc agt gac ttt ctc agc aac atg tcg atg gac   703
Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met Ser Met Asp
    165                 170                 175

ttc cag aac cac ctg ggc agc tgc caa aag tgt gat cca agc tgt ccc   751
Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro Ser Cys Pro
180                 185                 190                 195

aat ggg agc tgc tgg ggt gca gga gag gag aac tgc cag aaa ctg acc   799
Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln Lys Leu Thr
                200                 205                 210

aaa atc atc tgt gcc cag cag tgc tcc ggg cgc tgc cgt ggc aag tcc   847
Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg Gly Lys Ser
            215                 220                 225

ccc agt gac tgc tgc cac aac cag tgt gct gca ggc tgc aca ggc ccc   895
Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro
        230                 235                 240

cgg gag agc gac tgc ctg gtc tgc cgc aaa ttc cga gac gaa gcc acg   943
Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp Glu Ala Thr
    245                 250                 255

tgc aag gac acc tgc ccc cca ctc atg ctc tac aac ccc acc acg tac   991
Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro Thr Thr Tyr
260                 265                 270                 275

cag atg gat gtg aac ccc gag ggc aaa tac agc ttt ggt gcc acc tgc   1039
Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly Ala Thr Cys
                280                 285                 290

gtg aag aag tgt ccc cgt aat tat gtg gtg aca gat cac ggc tcg tgc   1087
Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His Gly Ser Cys
            295                 300                 305

gtc cga gcc tgt ggg gcc gac agc tat gag atg gag gaa gac ggc gtc   1135
Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu Asp Gly Val
        310                 315                 320

cgc aag tgt aag aag tgc gaa ggg cct tgc cgc aaa gtg tgt aac gga   1183
Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val Cys Asn Gly
    325                 330                 335

ata ggt att ggt gaa ttt aaa gac tca ctc tcc ata aat gct acg aat   1231
Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn Ala Thr Asn
340                 345                 350                 355

att aaa cac ttc aaa aac tgc acc tcc atc agt ggc gat ctc cac atc   1279
Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp Leu His Ile
                360                 365                 370
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ctg ccg gtg gca ttt agg ggt gac tcc ttc aca cat act cct cct ctg   1327
Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr Pro Pro Leu
            375                 380                 385

gat cca cag gaa ctg gat att ctg aaa acc gta aag gaa atc aca ggg   1375
Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu Ile Thr Gly
        390                 395                 400

ttt ttg ctg att cag gct tgg cct gaa aac agg acg gac ctc cat gcc   1423
Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp Leu His Ala
    405                 410                 415

ttt gag aac cta gaa atc ata cgc ggc agg acc aag caa cat ggt cag   1471
Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln His Gly Gln
420                 425                 430                 435

ttt tct ctt gca gtc gtc agc ctg aac ata aca tcc ttg gga tta cgc   1519
Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu Gly Leu Arg
                440                 445                 450

tcc ctc aag gag ata agt gat gga gat gtg ata att tca gga aac aaa   1567
Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser Gly Asn Lys
            455                 460                 465

aat ttg tgc tat gca aat aca ata aac tgg aaa aaa ctg ttt ggg acc   1615
Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu Phe Gly Thr
        470                 475                 480

tcc ggt cag aaa acc aaa att ata agc aac aga ggt gaa aac agc tgc   1663
Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu Asn Ser Cys
    485                 490                 495

aag gcc aca ggc cag gtc tgc cat gcc ttg tgc tcc ccc gag ggc tgc   1711
Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro Glu Gly Cys
500                 505                 510                 515

tgg ggc ccg gag ccc agg gac tgc gtc tct tgc cgg aat gtc agc cga   1759
Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn Val Ser Arg
                520                 525                 530

ggc agg gaa tgc gtg gac aag tgc aac ctt ctg gag ggt gag cca agg   1807
Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly Glu Pro Arg
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gag ttt gtg gag aac tct gag tgc ata cag tgc cac cca gag tgc ctg   1855
Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro Glu Cys Leu
        550                 555                 560

cct cag gcc atg aac atc acc tgc aca gga cgg gga cca gac aac tgt   1903
Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro Asp Asn Cys
    565                 570                 575

atc cag tgt gcc cac tac att gac ggc ccc cac tgc gtc aag acc tgc   1951
Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val Lys Thr Cys
580                 585                 590                 595

ccg gca gga gtc atg gga gaa aac aac acc ctg gtc tgg aag tac gca   1999
Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp Lys Tyr Ala
                600                 605                 610
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gac gcc ggc cat gtg tgc cac ctg tgc cat cca aac tgc acc tac gga   2047
Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys Thr Tyr Gly
            615                 620                 625

tgc act ggg cca ggt ctt gaa ggc tgt cca acg aat ggg cct aag atc   2095
Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly Pro Lys Ile
        630                 635                 640

ccg tcc atc gcc act ggg atg gtg ggg gcc ctc ctc ttg ctg ctg gtg   2143
Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu Leu Leu Val
    645                 650                 655

gtg gcc ctg ggg atc ggc ctc ttc atg cga agg cgc cac atc gtt cgg   2191
Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His Ile Val Arg
660                 665                 670                 675

aag cgc acg ctg cgg agg ctg ctg cag gag agg gag ctt gtg gag cct   2239
Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu Val Glu Pro
                680                 685                 690

ctt aca ccc agt gga gaa gct ccc aac caa gct ctc ttg agg atc ttg   2287
Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala Leu Leu Arg Ile Leu

            695                 700                 705

aag gaa act gaa ttc aaa aag atc aaa gtg ctg ggc tcc ggt gcg ttc   2335
Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser Gly Ala Phe
        710                 715                 720

ggc acg gtg tat aag gga ctc tgg atc cca gaa ggt gag aaa gtt aaa   2383
Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu Lys Val Lys
    725                 730                 735

att ccc gtc gct atc aag gaa tta aga gaa gca aca tct ccg aaa gcc   2431
Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser Pro Lys Ala
740                 745                 750                 755

aac aag gaa atc ctc gat gaa gcc tac gtg atg gcc agc gtg gac aac   2479
Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser Val Asp Asn
                760                 765                 770

ccc cac gtg tgc cgc ctg ctg ggc atc tgc ctc acc tcc acc gtg cag   2527
Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln
            775                 780                 785

ctc atc acg cag ctc atg ccc ttc ggc tgc ctc ctg gac tat gtc cgg   2575
Leu Ile Thr Gln Leu Met Pro Phe Gly Cys Leu Leu Asp Tyr Val Arg
        790                 795                 800

gaa cac aaa gac aat att ggc tcc cag tac ctg ctc aac tgg tgt gtg   2623
Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn Trp Cys Val
    805                 810                 815

cag atc gca aag ggc atg aac tac ttg gag gac cgt cgc ttg gtg cac   2671
Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg Leu Val His
820                 825                 830                 835

cgc gac ctg gca gcc agg aac gta ctg gtg aaa aca ccg cag cat gtc   2719
Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro Gln His Val
                840                 845                 850
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aag atc aca gat ttt ggg ctg gcc aaa ctg ctg ggt gcg gaa gag aaa   2767
Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala Glu Glu Lys
            855                 860                 865

gaa tac cat gca gaa gga ggc aaa gtg cct atc aag tgg atg gca ttg   2815
Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu
        870                 875                 880

gaa tca att tta cac aga atc tat acc cac cag agt gat gtc tgg agc   2863
Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp Val Trp Ser
    885                 890                 895

tac ggg gtg acc gtt tgg gag ttg atg acc ttt gga tcc aag cca tat   2911
Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser Lys Pro Tyr
900                 905                 910                 915

gac gga atc cct gcc agc gag atc tcc tcc atc ctg gag aaa gga gaa   2959
Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu Lys Gly Glu
                920                 925                 930

cgc ctc cct cag cca ccc ata tgt acc atc gat gtc tac atg atc atg   3007
Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met
            935                 940                 945

gtc aag tgc tgg atg ata gac gca gat agt cgc cca aag ttc cgt gag   3055
Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Arg Glu
        950                 955                 960

ttg atc atc gaa ttc tcc aaa atg gcc cga gac ccc cag cgc tac ctt   3103
Leu Ile Ile Glu Phe Ser Lys Met Ala Arg Asp Pro Gln Arg Tyr Leu
    965                 970                 975

gtc att cag ggg gat gaa aga atg cat ttg cca agt cct aca gac tcc   3151
Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro Thr Asp Ser
980                 985                 990                 995

aac ttc tac cgt gcc ctg atg gat gaa gaa gac atg gac gac gtg gtg   3199
Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Asp Asp Val Val
                1000                1005                1010

gat gcc gac gag tac ctc atc cca cag cag ggc ttc ttc agc agc ccc   3247
Asp Ala Asp Glu Tyr Leu Ile Pro Gln Gln Gly Phe Phe Ser Ser Pro
            1015                1020                1025

tcc acg tca cgg act ccc ctc ctg agc tct ctg agt gca acc agc aac   3295
Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala Thr Ser Asn
        1030                1035                1040

aat tcc acc gtg gct tgc att gat aga aat ggg ctg caa agc tgt ccc   3343
Asn Ser Thr Val Ala Cys Ile Asp Arg Asn Gly Leu Gln Ser Cys Pro
    1045                1050                1055

atc aag gaa gac agc ttc ttg cag cga tac agc tca gac ccc aca ggc   3391
Ile Lys Glu Asp Ser Phe Leu Gln Arg Tyr Ser Ser Asp Pro Thr Gly
1060                1065                1070                1075

gcc ttg act gag gac agc ata gac gac acc ttc ctc cca gtg cct gaa   3439
Ala Leu Thr Glu Asp Ser Ile Asp Asp Thr Phe Leu Pro Val Pro Glu
                1080                1085                1090

tac ata aac cag tcc gtt ccc aaa agg ccc gct ggc tct gtg cag aat   3487
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Tyr Ile Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser Val Gln Asn
          1095                1100                1105

cct gtc tat cac aat cag cct ctg aac ccc gcg ccc agc aga gac cca   3535
Pro Val Tyr His Asn Gln Pro Leu Asn Pro Ala Pro Ser Arg Asp Pro
       1110                1115                1120

cac tac cag gac ccc cac agc act gca gtg ggc aac ccc gag tat ctc   3583
His Tyr Gln Asp Pro His Ser Thr Ala Val Gly Asn Pro Glu Tyr Leu
   1125                1130                1135

aac act gtc cag ccc acc tgt gtc aac agc aca ttc gac agc cct gcc   3631
Asn Thr Val Gln Pro Thr Cys Val Asn Ser Thr Phe Asp Ser Pro Ala
1140                1145                1150                1155

cac tgg gcc cag aaa ggc agc cac caa att agc ctg gac aac cct gac   3679
His Trp Ala Gln Lys Gly Ser His Gln Ile Ser Leu Asp Asn Pro Asp
               1160                1165                1170

tac cag cag gac ttc ttt ccc aag gaa gcc aag cca aat ggc atc ttt   3727
Tyr Gln Gln Asp Phe Phe Pro Lys Glu Ala Lys Pro Asn Gly Ile Phe
          1175                1180                1185

aag ggc tcc aca gct gaa aat gca gaa tac cta agg gtc gcg cca caa   3775
Lys Gly Ser Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val Ala Pro Gln
       1190                1195                1200

agc agt gaa ttt att gga gca tga ccacggagga tagtatgagc cctaaaaatc  3829
Ser Ser Glu Phe Ile Gly Ala
   1205                1210

cagactcttt cgatacccag gaccaagcca cagcaggtcc tccatcccaa cagccatgcc 3889

cgcattagct cttagaccca cagactggtt ttgcaacgtt tacaccgact agccaggaag 3949

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Gly Thr Ser Asn Lys Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
        35                  40                  45
Leu Ser Leu Gln Arg Met Phe Asn Asn Cys Glu Val Val Leu Gly Asn
    50                  55                  60
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65                  70                  75                  80
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                85                  90                  95
Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Met Tyr
            100                 105                 110
Tyr Glu Asn Ser Tyr Ala Leu Ala Val Leu Ser Asn Tyr Asp Ala Asn
        115                 120                 125
Lys Thr Gly Leu Lys Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130                 135                 140
His Gly Ala Val Arg Phe Ser Asn Asn Pro Ala Leu Cys Asn Val Glu
145                 150                 155                 160
Ser Ile Gln Trp Arg Asp Ile Val Ser Ser Asp Phe Leu Ser Asn Met
                165                 170                 175
Ser Met Asp Phe Gln Asn His Leu Gly Ser Cys Gln Lys Cys Asp Pro
            180                 185                 190
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Ser Cys Pro Asn Gly Ser Cys Trp Gly Ala Gly Glu Glu Asn Cys Gln
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Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser Gly Arg Cys Arg
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Gly Lys Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225                 230                 235                 240
Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Arg Lys Phe Arg Asp
                245                 250                 255
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
            260                 265                 270
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
        275                 280                 285
Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
    290                 295                 300
Gly Ser Cys Val Arg Ala Cys Gly Ala Asp Ser Tyr Glu Met Glu Glu
305                 310                 315                 320
Asp Gly Val Arg Lys Cys Lys Lys Cys Glu Gly Pro Cys Arg Lys Val
                325                 330                 335
Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Ser Leu Ser Ile Asn
            340                 345                 350
Ala Thr Asn Ile Lys His Phe Lys Asn Cys Thr Ser Ile Ser Gly Asp
        355                 360                 365
Leu His Ile Leu Pro Val Ala Phe Arg Gly Asp Ser Phe Thr His Thr
    370                 375                 380
Pro Pro Leu Asp Pro Gln Glu Leu Asp Ile Leu Lys Thr Val Lys Glu
385                 390                 395                 400
Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Glu Asn Arg Thr Asp
                405                 410                 415
Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
            420                 425                 430
His Gly Gln Phe Ser Leu Ala Val Val Ser Leu Asn Ile Thr Ser Leu
        435                 440                 445
Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
    450                 455                 460
Gly Asn Lys Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465                 470                 475                 480
Phe Gly Thr Ser Gly Gln Lys Thr Lys Ile Ile Ser Asn Arg Gly Glu
                485                 490                 495
Asn Ser Cys Lys Ala Thr Gly Gln Val Cys His Ala Leu Cys Ser Pro
            500                 505                 510
Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Arg Asn
        515                 520                 525
Val Ser Arg Gly Arg Glu Cys Val Asp Lys Cys Asn Leu Leu Glu Gly
    530                 535                 540
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro
545                 550                 555                 560
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro
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Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
            580                 585                 590
Lys Thr Cys Pro Ala Gly Val Met Gly Glu Asn Asn Thr Leu Val Trp
        595                 600                 605
Lys Tyr Ala Asp Ala Gly His Val Cys His Leu Cys His Pro Asn Cys
    610                 615                 620
Thr Tyr Gly Cys Thr Gly Pro Gly Leu Glu Gly Cys Pro Thr Asn Gly
625                 630                 635                 640
Pro Lys Ile Pro Ser Ile Ala Thr Gly Met Val Gly Ala Leu Leu Leu
                645                 650                 655
Leu Leu Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His
            660                 665                 670
Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu
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675 680 685
Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala Leu Leu
690 695 700
Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser
705 710 715 720
Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu
725 730 735
Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser
740 745 750
Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser
755 760 765
Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser
770 775 780
Thr Val Gln Leu Ile Thr Gln Leu Met Pro Phe Gly Cys Leu Leu Asp
785 790 795 800
Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn
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Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg
820 825 830
Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro
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Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala
850 855 860
Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp
865 870 875 880
Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp
885 890 895
Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser
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Lys Pro Tyr Asp Gly Ile Pro Ala Ser Glu Ile Ser Ser Ile Leu Glu
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Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr
930 935 940
Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys
945 950 955 960
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995 1000 1005
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Ser Cys Pro Ile Lys Glu Asp Ser Phe Leu Gln Arg Tyr Ser Ser Asp
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Pro Thr Gly Ala Leu Thr Glu Asp Ser Ile Asp Asp Thr Phe Leu Pro
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Val Pro Glu Tyr Ile Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser
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Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu Asn Pro Ala Pro Ser
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Arg Asp Pro His Tyr Gln Asp Pro His Ser Thr Ala Val Gly Asn Pro
1125 1130 1135
Glu Tyr Leu Asn Thr Val Gln Pro Thr Cys Val Asn Ser Thr Phe Asp
1140 1145 1150
Ser Pro Ala His Trp Ala Gln Lys Gly Ser His Gln Ile Ser Leu Asp
1155 1160 1165

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Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu Ala Lys Pro Asn
   1170                1175                1180
Gly Ile Phe Lys Gly Ser Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val
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                                                Met Arg Pro Ser
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ggg acc gcg aga acc aca ctg ctg gtg ctg ctg acc gcg ctc tgc gcc   283
Gly Thr Ala Arg Thr Thr Leu Leu Val Leu Leu Thr Ala Leu Cys Ala
  5                  10                  15                  20

gca ggt ggg gcg ttg gag gaa aag aaa gtc tgc caa ggc aca agt aac   331
Ala Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln Gly Thr Ser Asn
                 25                  30                  35

agg ctc acc caa ctg ggc act ttt gaa gac cac ttt ctg agc ctg cag   379
Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe Leu Ser Leu Gln
             40                  45                  50

agg atg tac aac aac tgt gaa gtg gtc ctt ggg aac ttg gaa att acc   427
Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn Leu Glu Ile Thr
         55                  60                  65

tat gtg caa agg aat tac gac ctt tcc ttc tta aag acc atc cag gag   475
Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys Thr Ile Gln Glu
     70                  75                  80

gtg gcc ggc tat gtc ctc att gcc ctc aac acc gtg gag aga atc cct   523
Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val Glu Arg Ile Pro
 85                  90                  95                  100

ttg gag aac ctg cag atc atc agg gga aat gct ctt tat gaa aac acc   571
Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu Tyr Glu Asn Thr
                105                 110                 115

tat gcc tta gcc atc ctg tcc aac tat ggg aca aac aga act ggg ctt   619
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Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn Arg Thr Gly Leu
            120                 125                 130

agg gaa ctg ccc atg cgg aac tta cag gaa atc ctg att ggt gct gtg   667
Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu Ile Gly Ala Val
        135                 140                 145

cga ttc agc aac aac ccc atc ctc tgc aat atg gat act atc cag tgg   715
Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp Thr Ile Gln Trp
    150                 155                 160

agg gac atc gtc caa aac gtc ttt atg agc aac atg tca atg gac tta   763
Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met Ser Met Asp Leu
165                 170                 175                 180

cag agc cat ccg agc agt tgc ccc aaa tgt gat cca agc tgt ccc aat   811
Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro Ser Cys Pro Asn
                185                 190                 195

gga agc tgc tgg gga gga gga gag gag aac tgc cag aaa ttg acc aaa   859
Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln Lys Leu Thr Lys
            200                 205                 210

atc atc tgt gcc cag caa tgt tcc cat cgc tgt cgt ggc agg tcc ccc   907
Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg Gly Arg Ser Pro
        215                 220                 225

agt gac tgc tgc cac aac caa tgt gct gcg ggg tgt aca ggg ccc cga   955
Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys Thr Gly Pro Arg
    230                 235                 240

gag agt gac tgt ctg gtc tgc caa aag ttc caa gat gag gcc aca tgc   1003
Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp Glu Ala Thr Cys
245                 250                 255                 260

aaa gac acc tgc cca cca ctc atg ctg tac aac ccc acc acc tat cag   1051
Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro Thr Thr Tyr Gln
                265                 270                 275

atg gat gtc aac cct gaa ggg aag tac agc ttt ggt gcc acc tgt gtg   1099
Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly Ala Thr Cys Val
            280                 285                 290

aag aag tgc ccc cga aac tac gtg gtg aca gat cat ggc tca tgt gtc   1147
Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His Gly Ser Cys Val
        295                 300                 305

cga gcc tgt ggg cct gac tac tac gaa gtg gaa gaa gat ggc atc cgc   1195
Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu Asp Gly Ile Arg
    310                 315                 320

aag tgt aaa aaa tgt gat ggg ccc tgt cgc aaa gtt tgt aat ggc ata   1243
Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val Cys Asn Gly Ile
325                 330                 335                 340

ggc att ggt gaa ttt aaa gac aca ctc tcc ata aat gct aca aac atc   1291
Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn Ala Thr Asn Ile
                345                 350                 355

aaa cac ttc aaa tac tgc act gcc atc agc ggg gac ctt cac atc ctg   1339
Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp Leu His Ile Leu
```

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            360                 365                 370

cca gtg gcc ttt aag ggg gat tct ttc acg cgc act cct cct cta gac   1387
Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr Pro Pro Leu Asp
        375                 380                 385

cca cga gaa cta gaa att cta aaa acc gta aag gaa ata aca ggc ttt   1435
Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu Ile Thr Gly Phe
    390                 395                 400

ttg ctg att cag gct tgg cct gat aac tgg act gac ctc cat gct ttc   1483
Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp Leu His Ala Phe
405                 410                 415                 420

gag aac cta gaa ata ata cgt ggc aga aca aag caa cat ggt cag ttt   1531
Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln His Gly Gln Phe
                425                 430                 435

tct ttg gcg gtc gtt ggc ctg aac atc aca tca ctg ggg ctg cgt tcc   1579
Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu Gly Leu Arg Ser
            440                 445                 450

ctc aag gag atc agt gat ggg gat gtg atc att tct gga aac cga aat   1627
Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser Gly Asn Arg Asn
        455                 460                 465

ttg tgc tac gca aac aca ata aac tgg aaa aaa ctc ttc ggg aca ccc   1675
Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu Phe Gly Thr Pro
    470                 475                 480

aat cag aaa acc aaa atc atg aac aac aga gct gag aaa gac tgc aag   1723
Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu Lys Asp Cys Lys
485                 490                 495                 500

gcc gtg aac cac gtc tgc aat cct tta tgc tcc tcg gaa ggc tgc tgg   1771
Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser Glu Gly Cys Trp
                505                 510                 515

ggc cct gag ccc agg gac tgt gtc tcc tgc cag aat gtg agc aga ggc   1819
Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn Val Ser Arg Gly
            520                 525                 530

agg gag tgc gtg gag aaa tgc aac atc ctg gag ggg gaa cca agg gag   1867
Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly Glu Pro Arg Glu
        535                 540                 545

ttt gtg gaa aat tct gaa tgc atc cag tgc cat cca gaa tgt ctg ccc   1915
Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro Glu Cys Leu Pro
    550                 555                 560

cag gcc atg aac atc acc tgt aca ggc agg ggg cca gac aac tgc atc   1963
Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro Asp Asn Cys Ile
565                 570                 575                 580

cag tgt gcc cac tac att gat ggc cca cac tgt gtc aag acc tgc cca   2011
Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val Lys Thr Cys Pro
                585                 590                 595

gct ggc atc atg gga gag aac aac act ctg gtc tgg aag tat gca gat   2059
Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp Lys Tyr Ala Asp
            600                 605                 610
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gcc aat aat gtc tgc cac cta tgc cac gcc aac tgt acc tat gga tgt   2107
Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys Thr Tyr Gly Cys
        615                 620                 625

gct ggg cca ggt ctt caa gga tgt gaa gtg tgg cca tct ggg cca aag   2155
Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro Ser Gly Pro Lys
    630                 635                 640

ata cca tct att gcc act ggg att gtg ggt ggc ctc ctc ttc ata gtg   2203
Ile Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu Leu Phe Ile Val
645                 650                 655                 660

gtg gtg gcc ctt ggg att ggc cta ttc atg cga aga cgt cac att gtt   2251
Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg Arg His Ile Val
                665                 670                 675

cga aag cgt aca cta cgc cgc ctg ctt caa gag aga gag ctc gtg gaa   2299
Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg Glu Leu Val Glu
            680                 685                 690

cct ctc aca ccc agc gga gaa gct cca aac caa gcc cac ttg agg ata   2347
Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala His Leu Arg Ile
        695                 700                 705

tta aag gaa aca gaa ttc aaa aag atc aaa gtt ctg ggt tcg gga gca   2395
Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu Gly Ser Gly Ala
    710                 715                 720

ttt ggc aca gtg tat aag ggt ctc tgg atc cca gaa ggt gag aaa gta   2443
Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu Gly Glu Lys Val
725                 730                 735                 740

aaa atc ccg gtg gcc atc aag gag tta aga gaa gcc aca tct cca aaa   2491
Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala Thr Ser Pro Lys
                745                 750                 755

gcc aac aaa gaa atc ctt gac gaa gcc tat gtg atg gct agt gtg gac   2539
Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met Ala Ser Val Asp
            760                 765                 770

aac cct cat gta tgc cgc ctc ctg ggc atc tgt ctg acc tcc act gtc   2587
Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu Thr Ser Thr Val
        775                 780                 785

cag ctc att aca cag ctc atg ccc tac ggt tgc ctc ctg gac tac gtc   2635
Gln Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu Leu Asp Tyr Val
    790                 795                 800

cga gaa cac aag gac aac att ggc tcc cag tac ctc ctc aac tgg tgt   2683
Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu Leu Asn Trp Cys
805                 810                 815                 820

gtg cag att gca aag ggc atg aac tac ctg gaa gat cgg cgt ttg gtg   2731
Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp Arg Arg Leu Val
                825                 830                 835

cac cgt gac ttg gca gcc agg aat gta ctg gtg aag aca cca cag cat   2779
His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys Thr Pro Gln His
            840                 845                 850
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gtc aag atc aca gat ttt ggg ctg gcc aaa ctg ctt ggt gct gaa gag   2827
Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu Gly Ala Glu Glu
        855                 860                 865

aaa gaa tat cat gcc gag ggg ggc aaa gtg cct atc aag tgg atg gct   2875
Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile Lys Trp Met Ala

   870                 875                 880

ttg gaa tca att tta cac cga att tat aca cac caa agt gat gtc tgg   2923
Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln Ser Asp Val Trp
885                 890                 895                 900

agc tat ggt gtc act gtg tgg gaa ctg atg acc ttt ggg tcc aag cct   2971
Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe Gly Ser Lys Pro
                905                 910                 915

tat gat gga atc cca gca agt gac atc tca tcc atc cta gag aaa gga   3019
Tyr Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile Leu Glu Lys Gly
            920                 925                 930

gaa cgc ctt cca cag cca cct atc tgc acc atc gat gtc tac atg atc   3067
Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp Val Tyr Met Ile
        935                 940                 945

atg gtc aag tgc tgg atg ata gat gct gat agc cgc cca aag ttc cga   3115
Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg Pro Lys Phe Arg
    950                 955                 960

gag ttg att ctt gaa ttc tcc aaa atg gcc cga gac cca cag cgc tac   3163
Glu Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp Pro Gln Arg Tyr
965                 970                 975                 980

ctt gtt atc cag ggg gat gaa aga atg cat ttg cca agc cct aca gac   3211
Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro Ser Pro Thr Asp
                985                 990                 995

tcc aac ttt tac cga gcc ctg atg gat gaa gag gac atg gag gat gta   3259
Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp Met Glu Asp Val
            1000                1005                1010

gtt gat gct gat gag tat ctt acc cca cag caa ggc ttc ttc aac agc   3307
Val Asp Ala Asp Glu Tyr Leu Thr Pro Gln Gln Gly Phe Phe Asn Ser
        1015                1020                1025

ccg tcc acg tcg agg act ccc ctc ttg agt tct ctg agt gca act agc   3355
Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu Ser Ala Thr Ser
    1030                1035                1040

aac aat tcc act gtg gct tgc att aat aga aat ggg agc tgc cgt gtc   3403
Asn Asn Ser Thr Val Ala Cys Ile Asn Arg Asn Gly Ser Cys Arg Val
1045                1050                1055                1060

aaa gaa gac gcc ttc ttg cag cgg tac agc tcc gac ccc aca ggt gct   3451
Lys Glu Asp Ala Phe Leu Gln Arg Tyr Ser Ser Asp Pro Thr Gly Ala
                1065                1070                1075

gta aca gag gac aac ata gat gac gca ttc ctc cct gta cct gaa tat   3499
Val Thr Glu Asp Asn Ile Asp Asp Ala Phe Leu Pro Val Pro Glu Tyr
            1080                1085                1090
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gta aac caa tct gtt ccc aag agg cca gca ggc tct gtg cag aac cct   3547
Val Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser Val Gln Asn Pro
       1095                1100                1105

gtc tat cac aat cag ccc ctg cat cca gct cct gga aga gac ctg cat   3595
Val Tyr His Asn Gln Pro Leu His Pro Ala Pro Gly Arg Asp Leu His
   1110                1115                1120

tat caa aat ccc cac agc aat gca gtg ggc aac cct gag tat ctc aac   3643
Tyr Gln Asn Pro His Ser Asn Ala Val Gly Asn Pro Glu Tyr Leu Asn
1125                1130                1135                1140

act gcc cag cct acc tgt ctc agt agt ggg ttt aac agc cct gca ctc   3691
Thr Ala Gln Pro Thr Cys Leu Ser Ser Gly Phe Asn Ser Pro Ala Leu
               1145                1150                1155

tgg atc cag aaa ggc agt cac caa atg agc cta gac aac cct gac tac   3739
Trp Ile Gln Lys Gly Ser His Gln Met Ser Leu Asp Asn Pro Asp Tyr
           1160                1165                1170

cag cag gac ttc ttc ccc aag gaa acc aag cca aat ggc ata ttt aag   3787
Gln Gln Asp Phe Phe Pro Lys Glu Thr Lys Pro Asn Gly Ile Phe Lys
       1175                1180                1185

ggc ccc aca gct gaa aat gca gag tac cta cgg gtg gca cct cca agc   3835
Gly Pro Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val Ala Pro Pro Ser
   1190                1195                1200

agc gag ttt att gga gca tga caagaagggg catcatacca gctataaaat      3886
Ser Glu Phe Ile Gly Ala
1205                1210

gtctggactt tctagaatcc caggaccaac tatggcagca cctccacttc tggtagccat 3946

gcccacgctg tgtcaaatgt cactcagact ggctttaaag cataactctg atgggctttg 4006

tcactgagcc aagaagtggg cctctctcct gatgcacttt gggaagttga aggtacatca 4066

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ggaacagaag tttgcctcat ggtgaggtac atatgggaaa aaaacagaca tatggagctt 4186

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tggtacacag agttgcctgg agccaactga ccagacagtt ggttccacca gctctgcatc 4306

aagacacttc cgtggcaaga caactaaatg tataagaagt ccatggatgc cctgagcagg 4366

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accatgcaaa aatccataga ggaatttaac ccaaaatttt agtctcagca ttgtgtctgc 4786
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gccatttttg ataaacacta tcacaatgat ctcgggatcc atcctttccg atttaccaag 5026

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  1               5                  10                  15
Ala Leu Cys Ala Ala Gly Gly Ala Leu Glu Glu Lys Lys Val Cys Gln
            20                  25                  30
Gly Thr Ser Asn Arg Leu Thr Gln Leu Gly Thr Phe Glu Asp His Phe
        35                  40                  45
Leu Ser Leu Gln Arg Met Tyr Asn Asn Cys Glu Val Val Leu Gly Asn
    50                  55                  60
Leu Glu Ile Thr Tyr Val Gln Arg Asn Tyr Asp Leu Ser Phe Leu Lys
65                  70                  75                  80
Thr Ile Gln Glu Val Ala Gly Tyr Val Leu Ile Ala Leu Asn Thr Val
                85                  90                  95
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Glu Arg Ile Pro Leu Glu Asn Leu Gln Ile Ile Arg Gly Asn Ala Leu
            100                 105                 110
Tyr Glu Asn Thr Tyr Ala Leu Ala Ile Leu Ser Asn Tyr Gly Thr Asn
        115                 120                 125
Arg Thr Gly Leu Arg Glu Leu Pro Met Arg Asn Leu Gln Glu Ile Leu
    130                 135                 140
Ile Gly Ala Val Arg Phe Ser Asn Asn Pro Ile Leu Cys Asn Met Asp
145                 150                 155                 160
Thr Ile Gln Trp Arg Asp Ile Val Gln Asn Val Phe Met Ser Asn Met
                165                 170                 175
Ser Met Asp Leu Gln Ser His Pro Ser Ser Cys Pro Lys Cys Asp Pro
            180                 185                 190
Ser Cys Pro Asn Gly Ser Cys Trp Gly Gly Gly Glu Glu Asn Cys Gln
        195                 200                 205
Lys Leu Thr Lys Ile Ile Cys Ala Gln Gln Cys Ser His Arg Cys Arg
    210                 215                 220
Gly Arg Ser Pro Ser Asp Cys Cys His Asn Gln Cys Ala Ala Gly Cys
225                 230                 235                 240
Thr Gly Pro Arg Glu Ser Asp Cys Leu Val Cys Gln Lys Phe Gln Asp
                245                 250                 255
Glu Ala Thr Cys Lys Asp Thr Cys Pro Pro Leu Met Leu Tyr Asn Pro
            260                 265                 270
Thr Thr Tyr Gln Met Asp Val Asn Pro Glu Gly Lys Tyr Ser Phe Gly
        275                 280                 285
Ala Thr Cys Val Lys Lys Cys Pro Arg Asn Tyr Val Val Thr Asp His
    290                 295                 300
Gly Ser Cys Val Arg Ala Cys Gly Pro Asp Tyr Tyr Glu Val Glu Glu
305                 310                 315                 320
Asp Gly Ile Arg Lys Cys Lys Lys Cys Asp Gly Pro Cys Arg Lys Val
                325                 330                 335
Cys Asn Gly Ile Gly Ile Gly Glu Phe Lys Asp Thr Leu Ser Ile Asn
            340                 345                 350
Ala Thr Asn Ile Lys His Phe Lys Tyr Cys Thr Ala Ile Ser Gly Asp
        355                 360                 365
Leu His Ile Leu Pro Val Ala Phe Lys Gly Asp Ser Phe Thr Arg Thr
    370                 375                 380
Pro Pro Leu Asp Pro Arg Glu Leu Glu Ile Leu Lys Thr Val Lys Glu
385                 390                 395                 400
Ile Thr Gly Phe Leu Leu Ile Gln Ala Trp Pro Asp Asn Trp Thr Asp
                405                 410                 415
Leu His Ala Phe Glu Asn Leu Glu Ile Ile Arg Gly Arg Thr Lys Gln
            420                 425                 430
His Gly Gln Phe Ser Leu Ala Val Val Gly Leu Asn Ile Thr Ser Leu
        435                 440                 445
Gly Leu Arg Ser Leu Lys Glu Ile Ser Asp Gly Asp Val Ile Ile Ser
    450                 455                 460
Gly Asn Arg Asn Leu Cys Tyr Ala Asn Thr Ile Asn Trp Lys Lys Leu
465                 470                 475                 480
Phe Gly Thr Pro Asn Gln Lys Thr Lys Ile Met Asn Asn Arg Ala Glu
                485                 490                 495
Lys Asp Cys Lys Ala Val Asn His Val Cys Asn Pro Leu Cys Ser Ser
            500                 505                 510
Glu Gly Cys Trp Gly Pro Glu Pro Arg Asp Cys Val Ser Cys Gln Asn
        515                 520                 525
Val Ser Arg Gly Arg Glu Cys Val Glu Lys Cys Asn Ile Leu Glu Gly
    530                 535                 540
Glu Pro Arg Glu Phe Val Glu Asn Ser Glu Cys Ile Gln Cys His Pro
545                 550                 555                 560
Glu Cys Leu Pro Gln Ala Met Asn Ile Thr Cys Thr Gly Arg Gly Pro
                565                 570                 575
Asp Asn Cys Ile Gln Cys Ala His Tyr Ile Asp Gly Pro His Cys Val
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            580                 585                 590
Lys Thr Cys Pro Ala Gly Ile Met Gly Glu Asn Asn Thr Leu Val Trp
        595                 600                 605
Lys Tyr Ala Asp Ala Asn Asn Val Cys His Leu Cys His Ala Asn Cys
    610                 615                 620
Thr Tyr Gly Cys Ala Gly Pro Gly Leu Gln Gly Cys Glu Val Trp Pro
625                 630                 635                 640
Ser Gly Pro Lys Ile Pro Ser Ile Ala Thr Gly Ile Val Gly Gly Leu
                645                 650                 655
Leu Phe Ile Val Val Val Ala Leu Gly Ile Gly Leu Phe Met Arg Arg
            660                 665                 670
Arg His Ile Val Arg Lys Arg Thr Leu Arg Arg Leu Leu Gln Glu Arg
        675                 680                 685
Glu Leu Val Glu Pro Leu Thr Pro Ser Gly Glu Ala Pro Asn Gln Ala
    690                 695                 700
His Leu Arg Ile Leu Lys Glu Thr Glu Phe Lys Lys Ile Lys Val Leu
705                 710                 715                 720
Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys Gly Leu Trp Ile Pro Glu
                725                 730                 735
Gly Glu Lys Val Lys Ile Pro Val Ala Ile Lys Glu Leu Arg Glu Ala
            740                 745                 750
Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu Asp Glu Ala Tyr Val Met
        755                 760                 765
Ala Ser Val Asp Asn Pro His Val Cys Arg Leu Leu Gly Ile Cys Leu
    770                 775                 780
Thr Ser Thr Val Gln Leu Ile Thr Gln Leu Met Pro Tyr Gly Cys Leu
785                 790                 795                 800
Leu Asp Tyr Val Arg Glu His Lys Asp Asn Ile Gly Ser Gln Tyr Leu
                805                 810                 815
Leu Asn Trp Cys Val Gln Ile Ala Lys Gly Met Asn Tyr Leu Glu Asp
            820                 825                 830
Arg Arg Leu Val His Arg Asp Leu Ala Ala Arg Asn Val Leu Val Lys
        835                 840                 845
Thr Pro Gln His Val Lys Ile Thr Asp Phe Gly Leu Ala Lys Leu Leu
    850                 855                 860
Gly Ala Glu Glu Lys Glu Tyr His Ala Glu Gly Gly Lys Val Pro Ile
865                 870                 875                 880
Lys Trp Met Ala Leu Glu Ser Ile Leu His Arg Ile Tyr Thr His Gln
                885                 890                 895
Ser Asp Val Trp Ser Tyr Gly Val Thr Val Trp Glu Leu Met Thr Phe
            900                 905                 910
Gly Ser Lys Pro Tyr Asp Gly Ile Pro Ala Ser Asp Ile Ser Ser Ile
        915                 920                 925
Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro Pro Ile Cys Thr Ile Asp
    930                 935                 940
Val Tyr Met Ile Met Val Lys Cys Trp Met Ile Asp Ala Asp Ser Arg
945                 950                 955                 960
Pro Lys Phe Arg Glu Leu Ile Leu Glu Phe Ser Lys Met Ala Arg Asp
                965                 970                 975
Pro Gln Arg Tyr Leu Val Ile Gln Gly Asp Glu Arg Met His Leu Pro
            980                 985                 990
Ser Pro Thr Asp Ser Asn Phe Tyr Arg Ala Leu Met Asp Glu Glu Asp
        995                1000                1005
Met Glu Asp Val Val Asp Ala Asp Glu Tyr Leu Thr Pro Gln Gln Gly
   1010                1015                1020
Phe Phe Asn Ser Pro Ser Thr Ser Arg Thr Pro Leu Leu Ser Ser Leu
1025                1030                1035                1040
Ser Ala Thr Ser Asn Asn Ser Thr Val Ala Cys Ile Asn Arg Asn Gly
                1045                1050                1055
Ser Cys Arg Val Lys Glu Asp Ala Phe Leu Gln Arg Tyr Ser Ser Asp
            1060                1065                1070
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Pro Thr Gly Ala Val Thr Glu Asp Asn Ile Asp Asp Ala Phe Leu Pro
        1075                1080                1085
Val Pro Glu Tyr Val Asn Gln Ser Val Pro Lys Arg Pro Ala Gly Ser
    1090                1095                1100

Val Gln Asn Pro Val Tyr His Asn Gln Pro Leu His Pro Ala Pro Gly
1105                1110                1115                1120
Arg Asp Leu His Tyr Gln Asn Pro His Ser Asn Ala Val Gly Asn Pro
                1125                1130                1135
Glu Tyr Leu Asn Thr Ala Gln Pro Thr Cys Leu Ser Ser Gly Phe Asn
        1140                1145                1150
Ser Pro Ala Leu Trp Ile Gln Lys Gly Ser His Gln Met Ser Leu Asp
        1155                1160                1165
Asn Pro Asp Tyr Gln Gln Asp Phe Phe Pro Lys Glu Thr Lys Pro Asn
    1170                1175                1180
Gly Ile Phe Lys Gly Pro Thr Ala Glu Asn Ala Glu Tyr Leu Arg Val
1185                1190                1195                1200
Ala Pro Pro Ser Ser Glu Phe Ile Gly Ala
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gtcacagtga agtcagccag agcagggctg ttaaactctg tgaaatttgt cataagggtg 180

tcaggtattt cttactggct tccaaagaaa catagataaa gaaatctttc ctgtggcttc 240

ccttggcagg ctgcattcag aaggtctctc agttgaagaa agagcttgga ggacaacagc 300

acaacaggag agtaaaagat gccccagggc tgaggcctcc gctcaggcag ccgcatctgg 360

ggtcaatcat actcaccttg cccgggccat gctccagcaa aatcaagctg ttttcttttg 420

aaagttcaaa ctcatcaaga tt atg ctg ctc act ctt atc att ctg ttg cca  472
                        Met Leu Leu Thr Leu Ile Ile Leu Leu Pro
                          1               5                  10

gta gtt tca aaa ttt agt ttt gtt agt ctc tca gca ccg cag cac tgg   520
Val Val Ser Lys Phe Ser Phe Val Ser Leu Ser Ala Pro Gln His Trp
                15                  20                  25

agc tgt cct gaa ggt act ctc gca gga aat ggg aat tct act tgt gtg   568
Ser Cys Pro Glu Gly Thr Leu Ala Gly Asn Gly Asn Ser Thr Cys Val
            30                  35                  40
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ggt cct gca ccc ttc tta att ttc tcc cat gga aat agt atc ttt agg   616
Gly Pro Ala Pro Phe Leu Ile Phe Ser His Gly Asn Ser Ile Phe Arg
         45                  50                  55

att gac aca gaa gga acc aat tat gag caa ttg gtg gtg gat gct ggt   664
Ile Asp Thr Glu Gly Thr Asn Tyr Glu Gln Leu Val Val Asp Ala Gly
     60                  65                  70

gtc tca gtg atc atg gat ttt cat tat aat gag aaa aga atc tat tgg   712
Val Ser Val Ile Met Asp Phe His Tyr Asn Glu Lys Arg Ile Tyr Trp
 75                  80                  85                  90

gtg gat tta gaa aga caa ctt ttg caa aga gtt ttt ctg aat ggg tca   760
Val Asp Leu Glu Arg Gln Leu Leu Gln Arg Val Phe Leu Asn Gly Ser
                 95                 100                 105

agg caa gag aga gta tgt aat ata gag aaa aat gtt tct gga atg gca   808
Arg Gln Glu Arg Val Cys Asn Ile Glu Lys Asn Val Ser Gly Met Ala
            110                 115                 120

ata aat tgg ata aat gaa gaa gtt att tgg tca aat caa cag gaa gga   856
Ile Asn Trp Ile Asn Glu Glu Val Ile Trp Ser Asn Gln Gln Glu Gly
        125                 130                 135

atc att aca gta aca gat atg aaa gga aat aat tcc cac att ctt tta   904
Ile Ile Thr Val Thr Asp Met Lys Gly Asn Asn Ser His Ile Leu Leu
    140                 145                 150

agt gct tta aaa tat cct gca aat gta gca gtt gat cca gta gaa agg   952
Ser Ala Leu Lys Tyr Pro Ala Asn Val Ala Val Asp Pro Val Glu Arg
155                 160                 165                 170

ttt ata ttt tgg tct tca gag gtg gct gga agc ctt tat aga gca gat  1000
Phe Ile Phe Trp Ser Ser Glu Val Ala Gly Ser Leu Tyr Arg Ala Asp
                175                 180                 185

ctc gat ggt gtg gga gtg aag gct ctg ttg gag aca tca gag aaa ata  1048
Leu Asp Gly Val Gly Val Lys Ala Leu Leu Glu Thr Ser Glu Lys Ile
            190                 195                 200

aca gct gtg tca ttg gat gtg ctt gat aag cgg ctg ttt tgg att cag  1096
Thr Ala Val Ser Leu Asp Val Leu Asp Lys Arg Leu Phe Trp Ile Gln
        205                 210                 215

tac aac aga gaa gga agc aat tct ctt att tgc tcc tgt gat tat gat  1144
Tyr Asn Arg Glu Gly Ser Asn Ser Leu Ile Cys Ser Cys Asp Tyr Asp
    220                 225                 230

gga ggt tct gtc cac att agt aaa cat cca aca cag cat aat ttg ttt  1192
Gly Gly Ser Val His Ile Ser Lys His Pro Thr Gln His Asn Leu Phe
235                 240                 245                 250

gca atg tcc ctt ttt ggt gac cgt atc ttc tat tca aca tgg aaa atg  1240
Ala Met Ser Leu Phe Gly Asp Arg Ile Phe Tyr Ser Thr Trp Lys Met
                255                 260                 265

aag aca att tgg ata gcc aac aaa cac act gga aag gac atg gtt aga  1288
Lys Thr Ile Trp Ile Ala Asn Lys His Thr Gly Lys Asp Met Val Arg
            270                 275                 280

att aac ctc cat tca tca ttt gta cca ctt ggt gaa ctg aaa gta gtg  1336
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Ile Asn Leu His Ser Ser Phe Val Pro Leu Gly Glu Leu Lys Val Val
        285                 290                 295

cat cca ctt gca caa ccc aag gca gaa gat gac act tgg gag cct gag   1384
His Pro Leu Ala Gln Pro Lys Ala Glu Asp Asp Thr Trp Glu Pro Glu
    300                 305                 310

cag aaa ctt tgc aaa ttg agg aaa gga aac tgc agc agc act gtg tgt   1432
Gln Lys Leu Cys Lys Leu Arg Lys Gly Asn Cys Ser Ser Thr Val Cys
315                 320                 325                 330

ggg caa gac ctc cag tca cac ttg tgc atg tgt gca gag gga tac gcc   1480
Gly Gln Asp Leu Gln Ser His Leu Cys Met Cys Ala Glu Gly Tyr Ala
                335                 340                 345

cta agt cga gac cgg aag tac tgt gaa gat gtt aat gaa tgt gct ttt   1528
Leu Ser Arg Asp Arg Lys Tyr Cys Glu Asp Val Asn Glu Cys Ala Phe
            350                 355                 360

tgg aat cat ggc tgt act ctt ggg tgt aaa aac acc cct gga tcc tat   1576
Trp Asn His Gly Cys Thr Leu Gly Cys Lys Asn Thr Pro Gly Ser Tyr
        365                 370                 375

tac tgc acg tgc cct gta gga ttt gtt ctg ctt cct gat ggg aaa cga   1624
Tyr Cys Thr Cys Pro Val Gly Phe Val Leu Leu Pro Asp Gly Lys Arg
    380                 385                 390

tgt cat caa ctt gtt tcc tgt cca cgc aat gtg tct gaa tgc agc cat   1672
Cys His Gln Leu Val Ser Cys Pro Arg Asn Val Ser Glu Cys Ser His
395                 400                 405                 410

gac tgt gtt ctg aca tca gaa ggt ccc tta tgt ttc tgt cct gaa ggc   1720
Asp Cys Val Leu Thr Ser Glu Gly Pro Leu Cys Phe Cys Pro Glu Gly
                415                 420                 425

tca gtg ctt gag aga gat ggg aaa aca tgt agc ggt tgt tcc tca ccc   1768
Ser Val Leu Glu Arg Asp Gly Lys Thr Cys Ser Gly Cys Ser Ser Pro
            430                 435                 440

gat aat ggt gga tgt agc cag ctc tgc gtt cct ctt agc cca gta tcc   1816
Asp Asn Gly Gly Cys Ser Gln Leu Cys Val Pro Leu Ser Pro Val Ser
        445                 450                 455

tgg gaa tgt gat tgc ttt cct ggg tat gac cta caa ctg gat gaa aaa   1864
Trp Glu Cys Asp Cys Phe Pro Gly Tyr Asp Leu Gln Leu Asp Glu Lys
    460                 465                 470

agc tgt gca gct tca gga cca caa cca ttt ttg ctg ttt gcc aat tct   1912
Ser Cys Ala Ala Ser Gly Pro Gln Pro Phe Leu Leu Phe Ala Asn Ser
475                 480                 485                 490

caa gat att cga cac atg cat ttt gat gga aca gac tat gga act ctg   1960
Gln Asp Ile Arg His Met His Phe Asp Gly Thr Asp Tyr Gly Thr Leu
                495                 500                 505

ctc agc cag cag atg gga atg gtt tat gcc cta gat cat gac cct gtg   2008
Leu Ser Gln Gln Met Gly Met Val Tyr Ala Leu Asp His Asp Pro Val
            510                 515                 520

gaa aat aag ata tac ttt gcc cat aca gcc ctg aag tgg ata gag aga   2056
Glu Asn Lys Ile Tyr Phe Ala His Thr Ala Leu Lys Trp Ile Glu Arg
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          525                 530                 535

gct aat atg gat ggt tcc cag cga gaa agg ctt att gag gaa gga gta   2104
Ala Asn Met Asp Gly Ser Gln Arg Glu Arg Leu Ile Glu Glu Gly Val
    540                 545                 550

gat gtg cca gaa ggt ctt gct gtg gac tgg att ggc cgt aga ttc tat   2152
Asp Val Pro Glu Gly Leu Ala Val Asp Trp Ile Gly Arg Arg Phe Tyr
555                 560                 565                 570

tgg aca gac aga ggg aaa tct ctg att gga agg agt gat tta aat ggg   2200
Trp Thr Asp Arg Gly Lys Ser Leu Ile Gly Arg Ser Asp Leu Asn Gly
                575                 580                 585

aaa cgt tcc aaa ata atc act aag gag aac atc tct caa cca cga gga   2248
Lys Arg Ser Lys Ile Ile Thr Lys Glu Asn Ile Ser Gln Pro Arg Gly
            590                 595                 600

att gct gtt cat cca atg gcc aag aga tta ttc tgg act gat aca ggg   2296
Ile Ala Val His Pro Met Ala Lys Arg Leu Phe Trp Thr Asp Thr Gly
        605                 610                 615

att aat cca cga att gaa agt tct tcc ctc caa ggc ctt ggc cgt ctg   2344
Ile Asn Pro Arg Ile Glu Ser Ser Ser Leu Gln Gly Leu Gly Arg Leu
    620                 625                 630

gtt ata gcc agc tct gat cta atc tgg ccc agt gga ata acg att gac   2392
Val Ile Ala Ser Ser Asp Leu Ile Trp Pro Ser Gly Ile Thr Ile Asp
635                 640                 645                 650

ttc tta act gac aag ttg tac tgg tgc gat gcc aag cag tct gtg att   2440
Phe Leu Thr Asp Lys Leu Tyr Trp Cys Asp Ala Lys Gln Ser Val Ile
                655                 660                 665

gaa atg gcc aat ctg gat ggt tca aaa cgc cga aga ctt acc cag aat   2488
Glu Met Ala Asn Leu Asp Gly Ser Lys Arg Arg Arg Leu Thr Gln Asn
            670                 675                 680

gat gta ggt cac cca ttt gct gta gca gtg ttt gag gat tat gtg tgg   2536
Asp Val Gly His Pro Phe Ala Val Ala Val Phe Glu Asp Tyr Val Trp
        685                 690                 695

ttc tca gat tgg gct atg cca tca gta ata aga gta aac aag agg act   2584
Phe Ser Asp Trp Ala Met Pro Ser Val Ile Arg Val Asn Lys Arg Thr
    700                 705                 710

ggc aaa gat aga gta cgt ctc caa ggc agc atg ctg aag ccc tca tca   2632
Gly Lys Asp Arg Val Arg Leu Gln Gly Ser Met Leu Lys Pro Ser Ser
715                 720                 725                 730

ctg gtt gtg gtt cat cca ttg gca aaa cca gga gca gat ccc tgc tta   2680
Leu Val Val Val His Pro Leu Ala Lys Pro Gly Ala Asp Pro Cys Leu
                735                 740                 745

tat caa aac gga ggc tgt gaa cat att tgc aaa aag agg ctt gga act   2728
Tyr Gln Asn Gly Gly Cys Glu His Ile Cys Lys Lys Arg Leu Gly Thr
            750                 755                 760

gct tgg tgt tcg tgt cgt gaa ggt ttt atg aaa gcc tca gat ggg aaa   2776
Ala Trp Cys Ser Cys Arg Glu Gly Phe Met Lys Ala Ser Asp Gly Lys
        765                 770                 775
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acg tgt ctg gct ctg gat ggt cat cag ctg ttg gca ggt ggt gaa gtt   2824
Thr Cys Leu Ala Leu Asp Gly His Gln Leu Leu Ala Gly Gly Glu Val
    780                 785                 790

gat cta aag aac caa gta aca cca ttg gac atc ttg tcc aag act aga   2872
Asp Leu Lys Asn Gln Val Thr Pro Leu Asp Ile Leu Ser Lys Thr Arg
795                 800                 805                 810

gtg tca gaa gat aac att aca gaa tct caa cac atg cta gtg gct gaa   2920
Val Ser Glu Asp Asn Ile Thr Glu Ser Gln His Met Leu Val Ala Glu
                815                 820                 825

atc atg gtg tca gat caa gat gac tgt gct cct gtg gga tgc agc atg   2968
Ile Met Val Ser Asp Gln Asp Asp Cys Ala Pro Val Gly Cys Ser Met
            830                 835                 840

tat gct cgg tgt att tca gag gga gag gat gcc aca tgt cag tgt ttg   3016
Tyr Ala Arg Cys Ile Ser Glu Gly Glu Asp Ala Thr Cys Gln Cys Leu
        845                 850                 855

aaa gga ttt gct ggg gat gga aaa cta tgt tct gat ata gat gaa tgt   3064
Lys Gly Phe Ala Gly Asp Gly Lys Leu Cys Ser Asp Ile Asp Glu Cys
    860                 865                 870

gag atg ggt gtc cca gtg tgc ccc cct gcc tcc tcc aag tgc atc aac   3112
Glu Met Gly Val Pro Val Cys Pro Pro Ala Ser Ser Lys Cys Ile Asn
875                 880                 885                 890

acc gaa ggt ggt tat gtc tgc cgg tgc tca gaa ggc tac caa gga gat   3160
Thr Glu Gly Gly Tyr Val Cys Arg Cys Ser Glu Gly Tyr Gln Gly Asp
                895                 900                 905

ggg att cac tgt ctt gat att gat gag tgc caa ctg ggg gtg cac agc   3208
Gly Ile His Cys Leu Asp Ile Asp Glu Cys Gln Leu Gly Val His Ser
            910                 915                 920

tgt gga gag aat gcc agc tgc aca aat aca gag gga ggc tat acc tgc   3256
Cys Gly Glu Asn Ala Ser Cys Thr Asn Thr Glu Gly Gly Tyr Thr Cys
        925                 930                 935

atg tgt gct gga cgc ctg tct gaa cca gga ctg att tgc cct gac tct   3304
Met Cys Ala Gly Arg Leu Ser Glu Pro Gly Leu Ile Cys Pro Asp Ser
    940                 945                 950

act cca ccc cct cac ctc agg gaa gat gac cac cac tat tcc gta aga   3352
Thr Pro Pro Pro His Leu Arg Glu Asp Asp His His Tyr Ser Val Arg
955                 960                 965                 970

aat agt gac tct gaa tgt ccc ctg tcc cac gat ggg tac tgc ctc cat   3400
Asn Ser Asp Ser Glu Cys Pro Leu Ser His Asp Gly Tyr Cys Leu His
                975                 980                 985

gat ggt gtg tgc atg tat att gaa gca ttg gac aag tat gca tgc aac   3448
Asp Gly Val Cys Met Tyr Ile Glu Ala Leu Asp Lys Tyr Ala Cys Asn
            990                 995                1000

tgt gtt gtt ggc tac atc ggg gag cga tgt cag tac cga gac ctg aag   3496
Cys Val Val Gly Tyr Ile Gly Glu Arg Cys Gln Tyr Arg Asp Leu Lys
       1005                1010                1015
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tgg tgg gaa ctg cgc cac gct ggc cac ggg cag cag cag aag gtc atc   3544
Trp Trp Glu Leu Arg His Ala Gly His Gly Gln Gln Gln Lys Val Ile
   1020                1025                1030

gtg gtg gct gtc tgc gtg gtg gtg ctt gtc atg ctg ctc ctc ctg agc   3592
Val Val Ala Val Cys Val Val Val Leu Val Met Leu Leu Leu Leu Ser
1035                1040                1045                1050

ctg tgg ggg gcc cac tac tac agg act cag aag ctg cta tcg aaa aac   3640
Leu Trp Gly Ala His Tyr Tyr Arg Thr Gln Lys Leu Leu Ser Lys Asn
            1055                1060                1065

cca aag aat cct tat gag gag tcg agc aga gat gtg agg agt cgc agg   3688
Pro Lys Asn Pro Tyr Glu Glu Ser Ser Arg Asp Val Arg Ser Arg Arg
          1070                1075                1080


cct gct gac act gag gat ggg atg tcc tct tgc cct caa cct tgg ttt   3736
Pro Ala Asp Thr Glu Asp Gly Met Ser Ser Cys Pro Gln Pro Trp Phe
       1085                1090                1095

gtg gtt ata aaa gaa cac caa gac ctc aag aat ggg ggt caa cca gtg   3784
Val Val Ile Lys Glu His Gln Asp Leu Lys Asn Gly Gly Gln Pro Val
   1100                1105                1110

gct ggt gag gat ggc cag gca gca gat ggg tca atg caa cca act tca   3832
Ala Gly Glu Asp Gly Gln Ala Ala Asp Gly Ser Met Gln Pro Thr Ser
1115                1120                1125                1130

tgg agg cag gag ccc cag tta tgt gga atg ggc aca gag caa ggc tgc   3880
Trp Arg Gln Glu Pro Gln Leu Cys Gly Met Gly Thr Glu Gln Gly Cys
            1135                1140                1145

tgg att cca gta tcc agt gat aag ggc tcc tgt ccc cag gta atg gag   3928
Trp Ile Pro Val Ser Ser Asp Lys Gly Ser Cys Pro Gln Val Met Glu
          1150                1155                1160

cga agc ttt cat atg ccc tcc tat ggg aca cag acc ctt gaa ggg ggt   3976
Arg Ser Phe His Met Pro Ser Tyr Gly Thr Gln Thr Leu Glu Gly Gly
       1165                1170                1175

gtc gag aag ccc cat tct ctc cta tca gct aac cca tta tgg caa caa   4024
Val Glu Lys Pro His Ser Leu Leu Ser Ala Asn Pro Leu Trp Gln Gln
   1180                1185                1190

agg gcc ctg gac cca cca cac caa atg gag ctg act cag tga           4066
Arg Ala Leu Asp Pro Pro His Gln Met Glu Leu Thr Gln
1195                1200                1205

aaactggaat taaaaggaaa gtcaagaaga atgaactatg tcgatgcaca gtatcttttc 4126

tttcaaaagt agagcaaaac tataggtttt ggttccacaa tctctacgac taatcaccta 4186

ctcaatgcct ggagacagat acgtagttgt gcttttgttt gctcttttaa gcagtctcac 4246

tgcagtctta tttccaagta agagtactgg gagaatcact aggtaactta ttagaaaccc 4306

aaattgggac aacagtgctt tgtaaattgt gttgtcttca gcagtcaata caaatagatt 4366

tttgtttttg ttgttcctgc agccccagaa gaaattaggg gttaaagcag acagtcacac 4426
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tggtttggtc agttacaaag taatttcttt gatctggaca gaacatttat atcagtttca 4486

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ggcgtggtcc atgctgatga ttttgccaaa atgagttgtg atgaatcaat gaaaaatgta 4606

atttagaaac tgatttcttc agaattagat ggccttattt tttaaaatat ttgaatgaaa 4666

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Phe Val Ser Leu Ser Ala Pro Gln His Trp Ser Cys Pro Glu Gly Thr
             20                  25                  30
Leu Ala Gly Asn Gly Asn Ser Thr Cys Val Gly Pro Ala Pro Phe Leu
         35                  40                  45
Ile Phe Ser His Gly Asn Ser Ile Phe Arg Ile Asp Thr Glu Gly Thr
     50                  55                  60
Asn Tyr Glu Gln Leu Val Val Asp Ala Gly Val Ser Val Ile Met Asp
 65                  70                  75                  80
Phe His Tyr Asn Glu Lys Arg Ile Tyr Trp Val Asp Leu Glu Arg Gln
                 85                  90                  95
Leu Leu Gln Arg Val Phe Leu Asn Gly Ser Arg Gln Glu Arg Val Cys
            100                 105                 110
Asn Ile Glu Lys Asn Val Ser Gly Met Ala Ile Asn Trp Ile Asn Glu
        115                 120                 125
Glu Val Ile Trp Ser Asn Gln Gln Glu Gly Ile Ile Thr Val Thr Asp
    130                 135                 140
Met Lys Gly Asn Asn Ser His Ile Leu Leu Ser Ala Leu Lys Tyr Pro
145                 150                 155                 160
Ala Asn Val Ala Val Asp Pro Val Glu Arg Phe Ile Phe Trp Ser Ser
                165                 170                 175
Glu Val Ala Gly Ser Leu Tyr Arg Ala Asp Leu Asp Gly Val Gly Val
            180                 185                 190
Lys Ala Leu Leu Glu Thr Ser Glu Lys Ile Thr Ala Val Ser Leu Asp
        195                 200                 205
Val Leu Asp Lys Arg Leu Phe Trp Ile Gln Tyr Asn Arg Glu Gly Ser
    210                 215                 220
Asn Ser Leu Ile Cys Ser Cys Asp Tyr Asp Gly Gly Ser Val His Ile
225                 230                 235                 240
Ser Lys His Pro Thr Gln His Asn Leu Phe Ala Met Ser Leu Phe Gly

                245                 250                 255
Asp Arg Ile Phe Tyr Ser Thr Trp Lys Met Lys Thr Ile Trp Ile Ala
            260                 265                 270
Asn Lys His Thr Gly Lys Asp Met Val Arg Ile Asn Leu His Ser Ser
        275                 280                 285
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Phe Val Pro Leu Gly Glu Leu Lys Val Val His Pro Leu Ala Gln Pro
    290                 295                 300
Lys Ala Glu Asp Asp Thr Trp Glu Pro Glu Gln Lys Leu Cys Lys Leu
305                 310                 315                 320
Arg Lys Gly Asn Cys Ser Ser Thr Val Cys Gly Gln Asp Leu Gln Ser
                325                 330                 335
His Leu Cys Met Cys Ala Glu Gly Tyr Ala Leu Ser Arg Asp Arg Lys
            340                 345                 350
Tyr Cys Glu Asp Val Asn Glu Cys Ala Phe Trp Asn His Gly Cys Thr
        355                 360                 365
Leu Gly Cys Lys Asn Thr Pro Gly Ser Tyr Tyr Cys Thr Cys Pro Val
    370                 375                 380
Gly Phe Val Leu Leu Pro Asp Gly Lys Arg Cys His Gln Leu Val Ser
385                 390                 395                 400
Cys Pro Arg Asn Val Ser Glu Cys Ser His Asp Cys Val Leu Thr Ser
                405                 410                 415
Glu Gly Pro Leu Cys Phe Cys Pro Glu Gly Ser Val Leu Glu Arg Asp
            420                 425                 430
Gly Lys Thr Cys Ser Gly Cys Ser Ser Pro Asp Asn Gly Gly Cys Ser
        435                 440                 445
Gln Leu Cys Val Pro Leu Ser Pro Val Ser Trp Glu Cys Asp Cys Phe
    450                 455                 460
Pro Gly Tyr Asp Leu Gln Leu Asp Glu Lys Ser Cys Ala Ala Ser Gly
465                 470                 475                 480
Pro Gln Pro Phe Leu Leu Phe Ala Asn Ser Gln Asp Ile Arg His Met
                485                 490                 495
His Phe Asp Gly Thr Asp Tyr Gly Thr Leu Leu Ser Gln Gln Met Gly
            500                 505                 510
Met Val Tyr Ala Leu Asp His Asp Pro Val Glu Asn Lys Ile Tyr Phe
        515                 520                 525
Ala His Thr Ala Leu Lys Trp Ile Glu Arg Ala Asn Met Asp Gly Ser
    530                 535                 540
Gln Arg Glu Arg Leu Ile Glu Glu Gly Val Asp Val Pro Glu Gly Leu
545                 550                 555                 560
Ala Val Asp Trp Ile Gly Arg Arg Phe Tyr Trp Thr Asp Arg Gly Lys
                565                 570                 575
Ser Leu Ile Gly Arg Ser Asp Leu Asn Gly Lys Arg Ser Lys Ile Ile
            580                 585                 590
Thr Lys Glu Asn Ile Ser Gln Pro Arg Gly Ile Ala Val His Pro Met
        595                 600                 605
Ala Lys Arg Leu Phe Trp Thr Asp Thr Gly Ile Asn Pro Arg Ile Glu
    610                 615                 620
Ser Ser Ser Leu Gln Gly Leu Gly Arg Leu Val Ile Ala Ser Ser Asp
625                 630                 635                 640
Leu Ile Trp Pro Ser Gly Ile Thr Ile Asp Phe Leu Thr Asp Lys Leu
                645                 650                 655
Tyr Trp Cys Asp Ala Lys Gln Ser Val Ile Glu Met Ala Asn Leu Asp
            660                 665                 670
Gly Ser Lys Arg Arg Arg Leu Thr Gln Asn Asp Val Gly His Pro Phe
        675                 680                 685
Ala Val Ala Val Phe Glu Asp Tyr Val Trp Phe Ser Asp Trp Ala Met
    690                 695                 700
Pro Ser Val Ile Arg Val Asn Lys Arg Thr Gly Lys Asp Arg Val Arg
705                 710                 715                 720
Leu Gln Gly Ser Met Leu Lys Pro Ser Ser Leu Val Val Val His Pro
                725                 730                 735
Leu Ala Lys Pro Gly Ala Asp Pro Cys Leu Tyr Gln Asn Gly Gly Cys
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Glu His Ile Cys Lys Lys Arg Leu Gly Thr Ala Trp Cys Ser Cys Arg
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Glu Gly Phe Met Lys Ala Ser Asp Gly Lys Thr Cys Leu Ala Leu Asp
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    770                 775                 780
Gly His Gln Leu Leu Ala Gly Gly Glu Val Asp Leu Lys Asn Gln Val
785                 790                 795                 800
Thr Pro Leu Asp Ile Leu Ser Lys Thr Arg Val Ser Glu Asp Asn Ile
                805                 810                 815
Thr Glu Ser Gln His Met Leu Val Ala Glu Ile Met Val Ser Asp Gln
            820                 825                 830
Asp Asp Cys Ala Pro Val Gly Cys Ser Met Tyr Ala Arg Cys Ile Ser
        835                 840                 845
Glu Gly Glu Asp Ala Thr Cys Gln Cys Leu Lys Gly Phe Ala Gly Asp
    850                 855                 860
Gly Lys Leu Cys Ser Asp Ile Asp Glu Cys Glu Met Gly Val Pro Val
865                 870                 875                 880
Cys Pro Pro Ala Ser Ser Lys Cys Ile Asn Thr Glu Gly Gly Tyr Val
                885                 890                 895
Cys Arg Cys Ser Glu Gly Tyr Gln Gly Asp Gly Ile His Cys Leu Asp
            900                 905                 910
Ile Asp Glu Cys Gln Leu Gly Val His Ser Cys Gly Glu Asn Ala Ser
        915                 920                 925
Cys Thr Asn Thr Glu Gly Gly Tyr Thr Cys Met Cys Ala Gly Arg Leu
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Ser Glu Pro Gly Leu Ile Cys Pro Asp Ser Thr Pro Pro Pro His Leu
945                 950                 955                 960
Arg Glu Asp Asp His His Tyr Ser Val Arg Asn Ser Asp Ser Glu Cys
                965                 970                 975
Pro Leu Ser His Asp Gly Tyr Cys Leu His Asp Gly Val Cys Met Tyr
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Ile Glu Ala Leu Asp Lys Tyr Ala Cys Asn Cys Val Val Gly Tyr Ile
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Gly Glu Arg Cys Gln Tyr Arg Asp Leu Lys Trp Trp Glu Leu Arg His
   1010                1015                1020
Ala Gly His Gly Gln Gln Gln Lys Val Ile Val Val Ala Val Cys Val
1025                1030                1035                1040
Val Val Leu Val Met Leu Leu Leu Leu Ser Leu Trp Gly Ala His Tyr
                1045                1050                1055
Tyr Arg Thr Gln Lys Leu Leu Ser Lys Asn Pro Lys Asn Pro Tyr Glu
            1060                1065                1070
Glu Ser Ser Arg Asp Val Arg Ser Arg Arg Pro Ala Asp Thr Glu Asp
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Gly Met Ser Ser Cys Pro Gln Pro Trp Phe Val Val Ile Lys Glu His
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Gln Asp Leu Lys Asn Gly Gly Gln Pro Val Ala Gly Glu Asp Gly Gln
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Ala Ala Asp Gly Ser Met Gln Pro Thr Ser Trp Arg Gln Glu Pro Gln
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Leu Cys Gly Met Gly Thr Glu Gln Gly Cys Trp Ile Pro Val Ser Ser
            1140                1145                1150
Asp Lys Gly Ser Cys Pro Gln Val Met Glu Arg Ser Phe His Met Pro
        1155                1160                1165
Ser Tyr Gly Thr Gln Thr Leu Glu Gly Gly Val Glu Lys Pro His Ser
   1170                1175                1180
Leu Leu Ser Ala Asn Pro Leu Trp Gln Gln Arg Ala Leu Asp Pro Pro
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His Gln Met Glu Leu Thr Gln
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ctcagaggct ctcgagaggt gcagaaggac ctggaaaggc agctaaataa aag atg 356
Met
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Pro Trp Gly Arg Arg Pro Thr Trp Leu Leu Leu Ala Phe Leu Leu Val
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Phe Leu Lys Ile Ser Ile Leu Ser Val Thr Ala Trp Gln Thr Gly Asn
20 25 30

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Cys Gln Pro Gly Pro Leu Glu Arg Ser Glu Arg Ser Gly Thr Cys Ala
35 40 45

ggt cct gcc ccc ttc cta gtt ttc tca caa gga aag agc atc tct cgg 548
Gly Pro Ala Pro Phe Leu Val Phe Ser Gln Gly Lys Ser Ile Ser Arg
50 55 60 65

att gac cca gat gga aca aat cac cag caa ttg gtg gtg gat gct ggc 596

Ile Asp Pro Asp Gly Thr Asn His Gln Gln Leu Val Val Asp Ala Gly
70 75 80

atc tca gca gac atg gat att cat tat aaa aaa gag aga ctc tat tgg 644
Ile Ser Ala Asp Met Asp Ile His Tyr Lys Lys Glu Arg Leu Tyr Trp
85 90 95

gtg gat gta gaa aga caa gtt ttg cta aga gtt ttc ctt aac ggg aca 692
Val Asp Val Glu Arg Gln Val Leu Leu Arg Val Phe Leu Asn Gly Thr
100 105 110

gga cta gag aaa gtg tgc aat gta gag agg aag gtg tct ggg ctg gcc 740
Gly Leu Glu Lys Val Cys Asn Val Glu Arg Lys Val Ser Gly Leu Ala
115 120 125

ata gac tgg ata gat gat gaa gtt ctc tgg gta gac caa cag aac gga 788
Ile Asp Trp Ile Asp Asp Glu Val Leu Trp Val Asp Gln Gln Asn Gly
130 135 140 145

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gtc atc acc gta aca gat atg aca ggg aaa aat tcc cga gtt ctt cta   836
Val Ile Thr Val Thr Asp Met Thr Gly Lys Asn Ser Arg Val Leu Leu
                150                 155                 160

agt tcc tta aaa cat ccg tca aat ata gca gtg gat cca ata gag agg   884
Ser Ser Leu Lys His Pro Ser Asn Ile Ala Val Asp Pro Ile Glu Arg
            165                 170                 175

ttg atg ttt tgg tct tca gag gtg acc ggc agc ctt cac aga gca cac   932
Leu Met Phe Trp Ser Ser Glu Val Thr Gly Ser Leu His Arg Ala His
        180                 185                 190

ctc aaa ggt gtt gat gta aaa aca ctg ctg gag aca ggg gga ata tcg   980
Leu Lys Gly Val Asp Val Lys Thr Leu Leu Glu Thr Gly Gly Ile Ser
    195                 200                 205

gtg ctg act ctg gat gtc ctg gac aaa cgg ctc ttc tgg gtt cag gac  1028
Val Leu Thr Leu Asp Val Leu Asp Lys Arg Leu Phe Trp Val Gln Asp
210                 215                 220                 225

agt ggc gaa gga agc cac gct tac att cat tcc tgt gat tat gag ggt  1076
Ser Gly Glu Gly Ser His Ala Tyr Ile His Ser Cys Asp Tyr Glu Gly
                230                 235                 240

ggc tcc gtc cgt ctt atc agg cat caa gca cgg cac agt ttg tct tca  1124
Gly Ser Val Arg Leu Ile Arg His Gln Ala Arg His Ser Leu Ser Ser
            245                 250                 255

atg gcc ttt ttt ggt gat cgg atc ttc tac tca gtg ttg aaa agc aag  1172
Met Ala Phe Phe Gly Asp Arg Ile Phe Tyr Ser Val Leu Lys Ser Lys
        260                 265                 270

gcg att tgg ata gcc aac aaa cac acg ggg aag gac acg gtc agg att  1220
Ala Ile Trp Ile Ala Asn Lys His Thr Gly Lys Asp Thr Val Arg Ile
    275                 280                 285

aac ctc cat cca tcc ttt gtg aca cct gga aaa ctg atg gta gta cac  1268
Asn Leu His Pro Ser Phe Val Thr Pro Gly Lys Leu Met Val Val His
290                 295                 300                 305

cct cgt gca cag ccc agg aca gag gac gct gct aag gat cct gac ccc  1316
Pro Arg Ala Gln Pro Arg Thr Glu Asp Ala Ala Lys Asp Pro Asp Pro
                310                 315                 320

gaa ctt ctc aaa cag agg gga aga cca tgc cgc ttc ggt ctc tgt gag  1364
Glu Leu Leu Lys Gln Arg Gly Arg Pro Cys Arg Phe Gly Leu Cys Glu
            325                 330                 335

cga gac ccc aag tcc cac tcg agc gca tgc gct gag ggc tac acg tta  1412
Arg Asp Pro Lys Ser His Ser Ser Ala Cys Ala Glu Gly Tyr Thr Leu
        340                 345                 350

agc cga gac cgg aag tac tgc gaa gat gtc aat gaa tgt gcc act cag  1460
Ser Arg Asp Arg Lys Tyr Cys Glu Asp Val Asn Glu Cys Ala Thr Gln
    355                 360                 365

aat cac ggc tgt act ctt ggg tgt gaa aac acc cct gga tcc tat cac  1508
Asn His Gly Cys Thr Leu Gly Cys Glu Asn Thr Pro Gly Ser Tyr His
370                 375                 380                 385
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tgc aca tgc ccc aca gga ttt gtt ctg ctt cct gat ggg aaa caa tgt   1556
Cys Thr Cys Pro Thr Gly Phe Val Leu Leu Pro Asp Gly Lys Gln Cys
                390                 395                 400

cac gaa ctt gtt tcc tgc cca ggc aac gta tca aag tgc agt cat ggc   1604
His Glu Leu Val Ser Cys Pro Gly Asn Val Ser Lys Cys Ser His Gly
            405                 410                 415

tgt gtc ctg aca tca gat ggt ccc cgg tgc atc tgt cct gca ggt tca   1652
Cys Val Leu Thr Ser Asp Gly Pro Arg Cys Ile Cys Pro Ala Gly Ser
        420                 425                 430

gtg ctt ggg aga gat ggg aag act tgc act ggt tgt tca tcg cct gac   1700
Val Leu Gly Arg Asp Gly Lys Thr Cys Thr Gly Cys Ser Ser Pro Asp
    435                 440                 445

aat ggt gga tgc agc cag atc tgt ctt cct ctc agg cca gga tcc tgg   1748
Asn Gly Gly Cys Ser Gln Ile Cys Leu Pro Leu Arg Pro Gly Ser Trp
450                 455                 460                 465

gaa tgt gat tgc ttt cct ggg tat gac cta cag tca gac cga aag agc   1796
Glu Cys Asp Cys Phe Pro Gly Tyr Asp Leu Gln Ser Asp Arg Lys Ser
                470                 475                 480

tgt gca gct tca gga cca cag cca ctt tta ctg ttt gca aat tcc cag   1844
Cys Ala Ala Ser Gly Pro Gln Pro Leu Leu Leu Phe Ala Asn Ser Gln
            485                 490                 495

gac atc cga cac atg cat ttt gat gga aca gac tac aaa gtt ctg ctc   1892
Asp Ile Arg His Met His Phe Asp Gly Thr Asp Tyr Lys Val Leu Leu
        500                 505                 510

agc cgg cag atg gga atg gtt ttt gcc ttg gat tat gac cct gtg gaa   1940
Ser Arg Gln Met Gly Met Val Phe Ala Leu Asp Tyr Asp Pro Val Glu
    515                 520                 525

agc aag ata tat ttt gca cag aca gcc ctg aag tgg ata gag agg gct   1988
Ser Lys Ile Tyr Phe Ala Gln Thr Ala Leu Lys Trp Ile Glu Arg Ala
530                 535                 540                 545

aat atg gat ggg tcc cag cga gaa aga ctg atc aca gaa gga gta gat   2036
Asn Met Asp Gly Ser Gln Arg Glu Arg Leu Ile Thr Glu Gly Val Asp
                550                 555                 560

acg ctt gaa ggt ctt gcc ctg gac tgg att ggc cgg aga atc tac tgg   2084
Thr Leu Glu Gly Leu Ala Leu Asp Trp Ile Gly Arg Arg Ile Tyr Trp
            565                 570                 575

aca gac agt ggg aag tct gtt gtt gga ggg agc gat ctg agc ggg aag   2132
Thr Asp Ser Gly Lys Ser Val Val Gly Gly Ser Asp Leu Ser Gly Lys
        580                 585                 590

cat cat cga ata atc atc cag gag aga atc tcg agg ccg cga gga ata   2180
His His Arg Ile Ile Ile Gln Glu Arg Ile Ser Arg Pro Arg Gly Ile
    595                 600                 605

gct gtg cat cca agg gcc agg aga ctg ttc tgg acg gac gta ggg atg   2228
Ala Val His Pro Arg Ala Arg Arg Leu Phe Trp Thr Asp Val Gly Met
610                 615                 620                 625

tct cca cgg att gaa agc gct tcc ctt caa ggt tcc gac cgg gtg ctg   2276
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Ser Pro Arg Ile Glu Ser Ala Ser Leu Gln Gly Ser Asp Arg Val Leu
                630                 635                 640

ata gcc agc tcc aat cta ctg gaa ccc agt gga atc acg att gac tac   2324
Ile Ala Ser Ser Asn Leu Leu Glu Pro Ser Gly Ile Thr Ile Asp Tyr
            645                 650                 655

tta aca gac act ttg tac tgg tgt gac acc aag agg tct gtg att gaa   2372
Leu Thr Asp Thr Leu Tyr Trp Cys Asp Thr Lys Arg Ser Val Ile Glu
        660                 665                 670

atg gcc aat ctg gat ggc tcc aaa cgc cga aga ctt atc cag aac gac   2420
Met Ala Asn Leu Asp Gly Ser Lys Arg Arg Arg Leu Ile Gln Asn Asp
    675                 680                 685

gta ggt cac ccc ttc tct cta gcc gtg ttt gag gat cac ctg tgg gtc   2468
Val Gly His Pro Phe Ser Leu Ala Val Phe Glu Asp His Leu Trp Val
690                 695                 700                 705

tcg gat tgg gct atc cca tcg gta ata agg gtg aac aag agg act ggc   2516
Ser Asp Trp Ala Ile Pro Ser Val Ile Arg Val Asn Lys Arg Thr Gly
                710                 715                 720

caa aac agg gta cgt ctt caa ggc agc atg ctg aag ccc tcg tca ctg   2564
Gln Asn Arg Val Arg Leu Gln Gly Ser Met Leu Lys Pro Ser Ser Leu
            725                 730                 735

gtt gtg gtc cat cca ttg gca aaa cca ggt gca gat ccc tgc tta tac   2612
Val Val Val His Pro Leu Ala Lys Pro Gly Ala Asp Pro Cys Leu Tyr
        740                 745                 750

agg aat gga ggc tgt gaa cac atc tgc caa gag agc ctg ggc aca gct   2660
Arg Asn Gly Gly Cys Glu His Ile Cys Gln Glu Ser Leu Gly Thr Ala
    755                 760                 765

cgg tgt ttg tgt cgt gaa ggt ttt gtg aag gcc tgg gat ggg aaa atg   2708
Arg Cys Leu Cys Arg Glu Gly Phe Val Lys Ala Trp Asp Gly Lys Met
770                 775                 780                 785

tgt ctc cct cag gat tat cca atc ctg tca ggt gaa aat gct gat ctt   2756
Cys Leu Pro Gln Asp Tyr Pro Ile Leu Ser Gly Glu Asn Ala Asp Leu
                790                 795                 800

agt aaa gag gtg aca tca ctg agc aac tcc act cag gct gaa gta cca   2804
Ser Lys Glu Val Thr Ser Leu Ser Asn Ser Thr Gln Ala Glu Val Pro
            805                 810                 815

gac gat gat ggg aca gaa tct tcc aca cta gtg gct gaa atc atg gtg   2852
Asp Asp Asp Gly Thr Glu Ser Ser Thr Leu Val Ala Glu Ile Met Val
        820                 825                 830

tca ggc atg aac tat gaa gat gac tgt ggt ccc ggg ggg tgt gga agc   2900
Ser Gly Met Asn Tyr Glu Asp Asp Cys Gly Pro Gly Gly Cys Gly Ser
    835                 840                 845

cat gct cga tgc gtt tca gac gga gag act gct gag tgt cag tgt ctg   2948
His Ala Arg Cys Val Ser Asp Gly Glu Thr Ala Glu Cys Gln Cys Leu
850                 855                 860                 865

aaa ggg ttt gcc agg gat gga aac ctg tgt tct gat ata gat gag tgt   2996
Lys Gly Phe Ala Arg Asp Gly Asn Leu Cys Ser Asp Ile Asp Glu Cys
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                870                 875                 880

gtg ctg gct aga tcg gac tgc ccc agc acc tcg tcc agg tgc atc aac   3044
Val Leu Ala Arg Ser Asp Cys Pro Ser Thr Ser Ser Arg Cys Ile Asn
            885                 890                 895

act gaa ggt ggc tac gtc tgc aga tgc tca gaa ggc tac gaa gga gac   3092
Thr Glu Gly Gly Tyr Val Cys Arg Cys Ser Glu Gly Tyr Glu Gly Asp
        900                 905                 910

ggg atc tcc tgt ttc gat att gac gag tgc cag cgg ggg gcg cac aac   3140
Gly Ile Ser Cys Phe Asp Ile Asp Glu Cys Gln Arg Gly Ala His Asn
    915                 920                 925

tgc gct gag aat gcc gcc tgc acc aac acg gag gga ggc tac aac tgc   3188
Cys Ala Glu Asn Ala Ala Cys Thr Asn Thr Glu Gly Gly Tyr Asn Cys
930                 935                 940                 945

acc tgc gca ggc cgc cca tcc tcg ccc gga cgg agt tgc cct gac tct   3236
Thr Cys Ala Gly Arg Pro Ser Ser Pro Gly Arg Ser Cys Pro Asp Ser
                950                 955                 960

acc gca ccc tct ctc ctt ggg gaa gat ggc cac cat ttg gac cga aat   3284
Thr Ala Pro Ser Leu Leu Gly Glu Asp Gly His His Leu Asp Arg Asn
            965                 970                 975

agt tat cca gga tgc cca tcc tca tat gat gga tac tgc ctc aat ggt   3332
Ser Tyr Pro Gly Cys Pro Ser Ser Tyr Asp Gly Tyr Cys Leu Asn Gly
        980                 985                 990

ggc gtg tgc atg cat att gaa tca ctg gac agc tac aca tgc aac tgt   3380
Gly Val Cys Met His Ile Glu Ser Leu Asp Ser Tyr Thr Cys Asn Cys
    995                 1000                1005

gtt att ggc tat tct ggg gat cga tgt cag act cga gac cta cga tgg   3428
Val Ile Gly Tyr Ser Gly Asp Arg Cys Gln Thr Arg Asp Leu Arg Trp
1010                1015                1020                1025

tgg gag ctg cgt cat gct ggc tac ggg cag aag cat gac atc atg gtg   3476
Trp Glu Leu Arg His Ala Gly Tyr Gly Gln Lys His Asp Ile Met Val
                1030                1035                1040

gtg gct gtc tgc atg gtg gca ctg gtc ctg ctg ctc ctc ttg ggg atg   3524
Val Ala Val Cys Met Val Ala Leu Val Leu Leu Leu Leu Leu Gly Met
            1045                1050                1055

tgg ggg act tac tac tac agg act cgg aag cag cta tca aac ccc cca   3572
Trp Gly Thr Tyr Tyr Tyr Arg Thr Arg Lys Gln Leu Ser Asn Pro Pro
        1060                1065                1070

aag aac cct tgt gat gag cca agc gga agt gtg agc agc agc ggg ccc   3620
Lys Asn Pro Cys Asp Glu Pro Ser Gly Ser Val Ser Ser Ser Gly Pro
    1075                1080                1085

gac agc agc agc ggg gca gct gtg gct tct tgt ccc caa cct tgg ttt   3668
Asp Ser Ser Ser Gly Ala Ala Val Ala Ser Cys Pro Gln Pro Trp Phe
1090                1095                1100                1105

gtg gtc cta gag aaa cac caa gac ccc aag aat ggg agt ctg cct gcg   3716
Val Val Leu Glu Lys His Gln Asp Pro Lys Asn Gly Ser Leu Pro Ala
                1110                1115                1120
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gat ggt acg aat ggt gca gta gta gat gct ggc ctg tct ccc tcc ctg   3764
Asp Gly Thr Asn Gly Ala Val Val Asp Ala Gly Leu Ser Pro Ser Leu
            1125                1130                1135

cag ctc ggg tca gtg cat ctg act tca tgg aga cag aag ccc cac ata   3812
Gln Leu Gly Ser Val His Leu Thr Ser Trp Arg Gln Lys Pro His Ile
        1140                1145                1150

gat gga atg ggc aca ggg caa agc tgc tgg att cca cca tca agt gac   3860
Asp Gly Met Gly Thr Gly Gln Ser Cys Trp Ile Pro Pro Ser Ser Asp
    1155                1160                1165

aga gga ccc cag gaa ata gag gga aac tcc cac cta ccc tcc tac aga   3908
Arg Gly Pro Gln Glu Ile Glu Gly Asn Ser His Leu Pro Ser Tyr Arg
1170                1175                1180                1185

cct gtg ggg ccg gag aag ctg cat tct ctc cag tca gct aat gga tcg   3956
Pro Val Gly Pro Glu Lys Leu His Ser Leu Gln Ser Ala Asn Gly Ser
                1190                1195                1200

tgt cac gaa agg gct cca gac ctg cca cgg cag aca gag cca gtt aag   4004
Cys His Glu Arg Ala Pro Asp Leu Pro Arg Gln Thr Glu Pro Val Lys
            1205                1210                1215

tag aaactgggag tagacagaag gtacagaagg gaaaataaca aaccaggctg        4057

atgatggtag agtgctacag acttggtact ccagtttcca cggctaatca ctgctcgctc 4117

agggtcctga agatagctgc acagctgcag agctgcacag cgggatagct gcgacttttg 4177

cttcttgctt taagcagttc cactgaagat actcaaaaga gaagtggaga aaatcattag 4237

aaaccaaagt caagacattc atatataagc tgtgtcttct tcactggacg gtttgcctct 4297

tttccttttg cctcagaagg agtgggttaa agcaggtgac cccatgctct gtcaacccct 4357

gaataaatga tgtgatctac atagaagtct tagctcactc tcaggaacgc ttggaacact 4417

ataacttttg ctatgatata ctgccaagtg tggcccatgc tcataattgt gccttctgaa 4477

ttgtgataaa ttagtgaaaa aactgtaact tagaatctga tttattcagg attagatcat 4537

ctttttatac tataaaaatc ttcgaatgaa aatatttaac tttaaaaaca ttaccttaat 4597

cattgtcttt tcttcttgaa gtctttccca gtgaaaacgc tcaattctgc tgtttccata 4657

gaatttttaa tttattttaa gacatgagat tgtaaacaaa ttgcttgatt tattttatcc 4717

taattattta aataaaatca ccctaaagca tc                              4749
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Val Phe Leu Lys Ile Ser Ile Leu Ser Val Thr Ala Trp Gln Thr Gly
            20                  25                  30
Asn Cys Gln Pro Gly Pro Leu Glu Arg Ser Glu Arg Ser Gly Thr Cys
        35                  40                  45
Ala Gly Pro Ala Pro Phe Leu Val Phe Ser Gln Gly Lys Ser Ile Ser
    50                  55                  60
Arg Ile Asp Pro Asp Gly Thr Asn His Gln Gln Leu Val Val Asp Ala
65                  70                  75                  80
Gly Ile Ser Ala Asp Met Asp Ile His Tyr Lys Lys Glu Arg Leu Tyr
                85                  90                  95
Trp Val Asp Val Glu Arg Gln Val Leu Leu Arg Val Phe Leu Asn Gly
            100                 105                 110
Thr Gly Leu Glu Lys Val Cys Asn Val Glu Arg Lys Val Ser Gly Leu
        115                 120                 125
Ala Ile Asp Trp Ile Asp Asp Glu Val Leu Trp Val Asp Gln Gln Asn
    130                 135                 140
Gly Val Ile Thr Val Thr Asp Met Thr Gly Lys Asn Ser Arg Val Leu
145                 150                 155                 160
Leu Ser Ser Leu Lys His Pro Ser Asn Ile Ala Val Asp Pro Ile Glu
                165                 170                 175
Arg Leu Met Phe Trp Ser Ser Glu Val Thr Gly Ser Leu His Arg Ala
            180                 185                 190
His Leu Lys Gly Val Asp Val Lys Thr Leu Leu Glu Thr Gly Gly Ile
        195                 200                 205
Ser Val Leu Thr Leu Asp Val Leu Asp Lys Arg Leu Phe Trp Val Gln
    210                 215                 220
Asp Ser Gly Glu Gly Ser His Ala Tyr Ile His Ser Cys Asp Tyr Glu
225                 230                 235                 240
Gly Gly Ser Val Arg Leu Ile Arg His Gln Ala Arg His Ser Leu Ser
                245                 250                 255
Ser Met Ala Phe Phe Gly Asp Arg Ile Phe Tyr Ser Val Leu Lys Ser
            260                 265                 270
Lys Ala Ile Trp Ile Ala Asn Lys His Thr Gly Lys Asp Thr Val Arg
        275                 280                 285
Ile Asn Leu His Pro Ser Phe Val Thr Pro Gly Lys Leu Met Val Val
    290                 295                 300
His Pro Arg Ala Gln Pro Arg Thr Glu Asp Ala Ala Lys Asp Pro Asp
305                 310                 315                 320
Pro Glu Leu Leu Lys Gln Arg Gly Arg Pro Cys Arg Phe Gly Leu Cys
                325                 330                 335
Glu Arg Asp Pro Lys Ser His Ser Ser Ala Cys Ala Glu Gly Tyr Thr
            340                 345                 350
Leu Ser Arg Asp Arg Lys Tyr Cys Glu Asp Val Asn Glu Cys Ala Thr
        355                 360                 365
Gln Asn His Gly Cys Thr Leu Gly Cys Glu Asn Thr Pro Gly Ser Tyr
    370                 375                 380
His Cys Thr Cys Pro Thr Gly Phe Val Leu Leu Pro Asp Gly Lys Gln
385                 390                 395                 400
Cys His Glu Leu Val Ser Cys Pro Gly Asn Val Ser Lys Cys Ser His
                405                 410                 415
Gly Cys Val Leu Thr Ser Asp Gly Pro Arg Cys Ile Cys Pro Ala Gly
            420                 425                 430
Ser Val Leu Gly Arg Asp Gly Lys Thr Cys Thr Gly Cys Ser Ser Pro
        435                 440                 445
Asp Asn Gly Gly Cys Ser Gln Ile Cys Leu Pro Leu Arg Pro Gly Ser
    450                 455                 460
Trp Glu Cys Asp Cys Phe Pro Gly Tyr Asp Leu Gln Ser Asp Arg Lys
465                 470                 475                 480
Ser Cys Ala Ala Ser Gly Pro Gln Pro Leu Leu Leu Phe Ala Asn Ser
                485                 490                 495
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Gln Asp Ile Arg His Met His Phe Asp Gly Thr Asp Tyr Lys Val Leu
            500                 505                 510
Leu Ser Arg Gln Met Gly Met Val Phe Ala Leu Asp Tyr Asp Pro Val
        515                 520                 525
Glu Ser Lys Ile Tyr Phe Ala Gln Thr Ala Leu Lys Trp Ile Glu Arg
    530                 535                 540
Ala Asn Met Asp Gly Ser Gln Arg Glu Arg Leu Ile Thr Glu Gly Val
545                 550                 555                 560
Asp Thr Leu Glu Gly Leu Ala Leu Asp Trp Ile Gly Arg Arg Ile Tyr
                565                 570                 575
Trp Thr Asp Ser Gly Lys Ser Val Val Gly Gly Ser Asp Leu Ser Gly
            580                 585                 590
Lys His His Arg Ile Ile Ile Gln Glu Arg Ile Ser Arg Pro Arg Gly
        595                 600                 605
Ile Ala Val His Pro Arg Ala Arg Arg Leu Phe Trp Thr Asp Val Gly
    610                 615                 620
Met Ser Pro Arg Ile Glu Ser Ala Ser Leu Gln Gly Ser Asp Arg Val
625                 630                 635                 640
Leu Ile Ala Ser Ser Asn Leu Leu Glu Pro Ser Gly Ile Thr Ile Asp
                645                 650                 655
Tyr Leu Thr Asp Thr Leu Tyr Trp Cys Asp Thr Lys Arg Ser Val Ile
            660                 665                 670
Glu Met Ala Asn Leu Asp Gly Ser Lys Arg Arg Arg Leu Ile Gln Asn
        675                 680                 685
Asp Val Gly His Pro Phe Ser Leu Ala Val Phe Glu Asp His Leu Trp
    690                 695                 700
Val Ser Asp Trp Ala Ile Pro Ser Val Ile Arg Val Asn Lys Arg Thr
705                 710                 715                 720
Gly Gln Asn Arg Val Arg Leu Gln Gly Ser Met Leu Lys Pro Ser Ser
                725                 730                 735
Leu Val Val Val His Pro Leu Ala Lys Pro Gly Ala Asp Pro Cys Leu
            740                 745                 750
Tyr Arg Asn Gly Gly Cys Glu His Ile Cys Gln Glu Ser Leu Gly Thr
        755                 760                 765
Ala Arg Cys Leu Cys Arg Glu Gly Phe Val Lys Ala Trp Asp Gly Lys
    770                 775                 780
Met Cys Leu Pro Gln Asp Tyr Pro Ile Leu Ser Gly Glu Asn Ala Asp
785                 790                 795                 800
Leu Ser Lys Glu Val Thr Ser Leu Ser Asn Ser Thr Gln Ala Glu Val
                805                 810                 815
Pro Asp Asp Asp Gly Thr Glu Ser Ser Thr Leu Val Ala Glu Ile Met
            820                 825                 830
Val Ser Gly Met Asn Tyr Glu Asp Asp Cys Gly Pro Gly Gly Cys Gly
        835                 840                 845
Ser His Ala Arg Cys Val Ser Asp Gly Glu Thr Ala Glu Cys Gln Cys
    850                 855                 860
Leu Lys Gly Phe Ala Arg Asp Gly Asn Leu Cys Ser Asp Ile Asp Glu
865                 870                 875                 880
Cys Val Leu Ala Arg Ser Asp Cys Pro Ser Thr Ser Ser Arg Cys Ile
                885                 890                 895
Asn Thr Glu Gly Gly Tyr Val Cys Arg Cys Ser Glu Gly Tyr Glu Gly
            900                 905                 910
Asp Gly Ile Ser Cys Phe Asp Ile Asp Glu Cys Gln Arg Gly Ala His
        915                 920                 925
Asn Cys Ala Glu Asn Ala Ala Cys Thr Asn Thr Glu Gly Gly Tyr Asn
    930                 935                 940
Cys Thr Cys Ala Gly Arg Pro Ser Ser Pro Gly Arg Ser Cys Pro Asp
945                 950                 955                 960
Ser Thr Ala Pro Ser Leu Leu Gly Glu Asp Gly His His Leu Asp Arg
                965                 970                 975
Asn Ser Tyr Pro Gly Cys Pro Ser Ser Tyr Asp Gly Tyr Cys Leu Asn
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          980                 985                 990
Gly Gly Val Cys Met His Ile Glu Ser Leu Asp Ser Tyr Thr Cys Asn
        995                1000                1005
Cys Val Ile Gly Tyr Ser Gly Asp Arg Cys Gln Thr Arg Asp Leu Arg
   1010                1015                1020
Trp Trp Glu Leu Arg His Ala Gly Tyr Gly Gln Lys His Asp Ile Met
1025                1030                1035                1040
Val Val Ala Val Cys Met Val Ala Leu Val Leu Leu Leu Leu Leu Gly
                1045                1050                1055
Met Trp Gly Thr Tyr Tyr Tyr Arg Thr Arg Lys Gln Leu Ser Asn Pro
            1060                1065                1070
Pro Lys Asn Pro Cys Asp Glu Pro Ser Gly Ser Val Ser Ser Ser Gly
        1075                1080                1085
Pro Asp Ser Ser Ser Gly Ala Ala Val Ala Ser Cys Pro Gln Pro Trp
   1090                1095                1100
Phe Val Val Leu Glu Lys His Gln Asp Pro Lys Asn Gly Ser Leu Pro
1105                1110                1115                1120
Ala Asp Gly Thr Asn Gly Ala Val Val Asp Ala Gly Leu Ser Pro Ser
                1125                1130                1135
Leu Gln Leu Gly Ser Val His Leu Thr Ser Trp Arg Gln Lys Pro His
            1140                1145                1150
Ile Asp Gly Met Gly Thr Gly Gln Ser Cys Trp Ile Pro Pro Ser Ser
        1155                1160                1165
Asp Arg Gly Pro Gln Glu Ile Glu Gly Asn Ser His Leu Pro Ser Tyr
   1170                1175                1180
Arg Pro Val Gly Pro Glu Lys Leu His Ser Leu Gln Ser Ala Asn Gly
1185                1190                1195                1200
Ser Cys His Glu Arg Ala Pro Asp Leu Pro Arg Gln Thr Glu Pro Val
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Lys
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                                      Met Val Pro Ser Ala Gly Gln
                                        1               5

ctc gcc ctg ttc gct ctg ggt att gtg ttg gct gcg tgc cag gcc ttg   100
Leu Ala Leu Phe Ala Leu Gly Ile Val Leu Ala Ala Cys Gln Ala Leu
         10                  15                  20

gag aac agc acg tcc ccg ctg agt gca gac ccg ccc gtg gct gca gca   148
Glu Asn Ser Thr Ser Pro Leu Ser Ala Asp Pro Pro Val Ala Ala Ala
     25                  30                  35

gtg gtg tcc cat ttt aat gac tgc cca gat tcc cac act cag ttc tgc   196
Val Val Ser His Phe Asn Asp Cys Pro Asp Ser His Thr Gln Phe Cys
 40                  45                  50                  55
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ttc cat gga acc tgc agg ttt ttg gtg cag gag gac aag cca gca tgt   244
Phe His Gly Thr Cys Arg Phe Leu Val Gln Glu Asp Lys Pro Ala Cys
                60                  65                  70

gtc tgc cat tct ggg tac gtt ggt gca cgc tgt gag cat gcg gac ctc   292

Val Cys His Ser Gly Tyr Val Gly Ala Arg Cys Glu His Ala Asp Leu
            75                  80                  85

ctg gcc gtg gtg gct gcc agc cag aag aag cag gcc atc acc gcc ttg   340
Leu Ala Val Val Ala Ala Ser Gln Lys Lys Gln Ala Ile Thr Ala Leu
        90                  95                  100

gtg gtg gtc tcc atc gtg gcc ctg gct gtc ctt atc atc aca tgt gtg   388
Val Val Val Ser Ile Val Ala Leu Ala Val Leu Ile Ile Thr Cys Val
    105                 110                 115

ctg ata cac tgc tgc cag gtc cga aaa cac tgt gag tgg tgc cgg gcc   436
Leu Ile His Cys Cys Gln Val Arg Lys His Cys Glu Trp Cys Arg Ala
120                 125                 130                 135

ctc atc tgc cgg cac gag aag ccc agc gcc ctc ctg aag gga aga acc   484
Leu Ile Cys Arg His Glu Lys Pro Ser Ala Leu Leu Lys Gly Arg Thr
                140                 145                 150

gct tgc tgc cac tca gaa aca gtg gtc tga agagcccaga ggaggagttt     534
Ala Cys Cys His Ser Glu Thr Val Val
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<213> Homo sapiens
<223> Human TGF- alpha

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Arg	Cys	Glu	His	Ala	Asp	Leu	Leu	Ala	Val	Val	Ala	Ala	Ser	Gln	Lys
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Lys	Gln	Ala	Ile	Thr	Ala	Leu	Val	Val	Val	Ser	Ile	Val	Ala	Leu	Ala
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Ala Leu Leu Ala Leu Gly Ile Leu Leu Ala Val Cys Gln Ala Leu Glu
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Asn Ser Thr Ser Pro Leu Ser Asp Ser Pro Val Ala Ala Ala Val Val
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Ser His Phe Asn Lys Cys Pro Asp Ser His Thr Gln Tyr Cys Phe His
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Gly Thr Cys Arg Phe Leu Val Gln Glu Glu Lys Pro Ala Cys Val Cys
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His Ser Gly Tyr Val Gly Val Arg Cys Glu His Ala Asp Leu Leu Ala
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Val Val Ala Ala Ser Gln Lys Lys Gln Ala Ile Thr Ala Leu Val Val
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Val Ser Ile Val Ala Leu Ala Val Leu Ile Ile Thr Cys Val Leu Ile

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His Cys Cys Gln Leu Arg Lys His Cys Glu Trp Cys Arg Ala Leu Val
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Cys Arg His Glu Lys Pro Ser Ala Leu Leu Lys Gly Arg Thr Ala Cys
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Cys His Ser Glu Thr Val Val
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Cys Glu Trp Cys Arg Ala Leu Val Cys Arg His Glu Lys Pro Ser Ala
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Leu Leu Lys Gly Arg Thr Ala Cys Cys His Ser Glu Thr Val Val
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